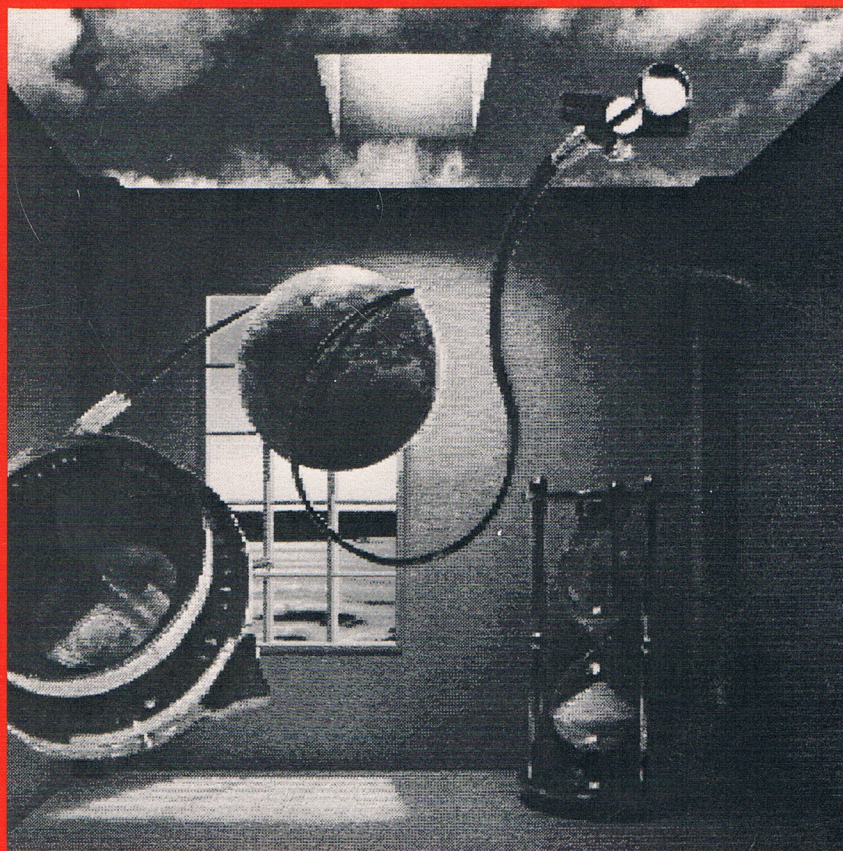


DELUXE

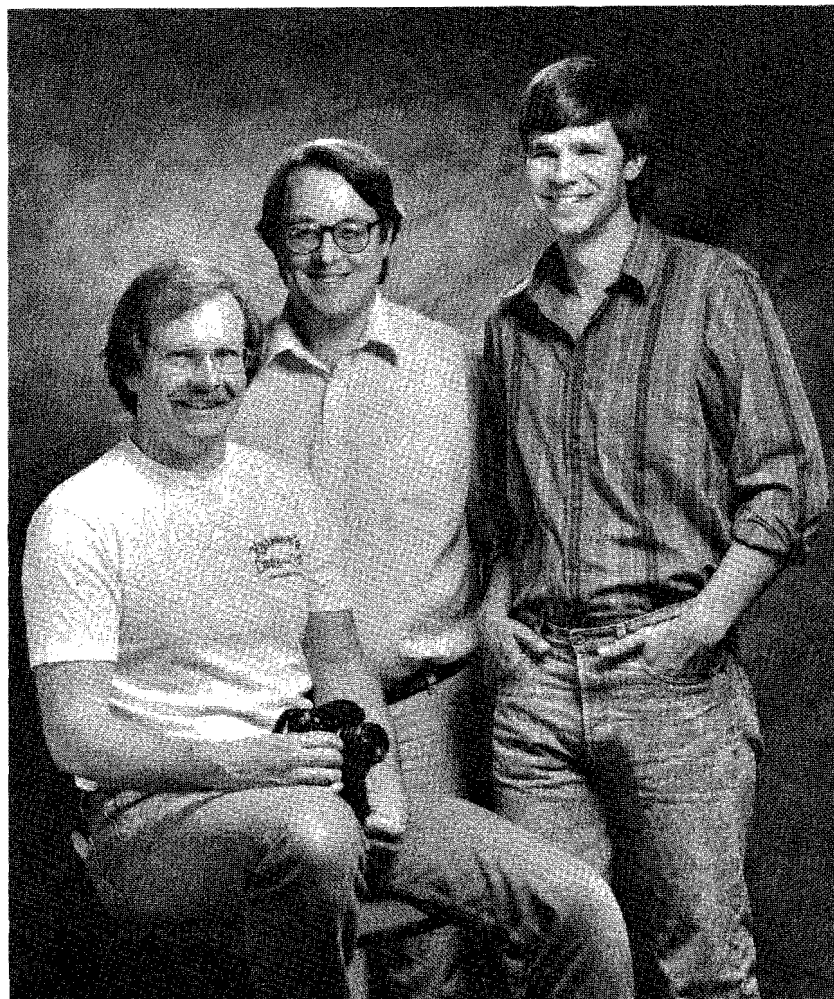
PHOTOLAB™



MANUAL
FOR YOUR AMIGA



ELECTRONIC ARTS®
DELUXE CREATIVITY SERIES





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*DeluxePhotoLab is a collection of three powerful graphics tools in one package. Each of the three programs — **Paint**, **Colors**, and **Posters** — is a breakthrough in its class, and together they offer a comprehensive solution for painting, image processing, and poster printing.*

***Paint** lets you paint in every Amiga display mode, including Hold and Modify Interlaced. Now you can create those photo quality images you've yearned after, or you can touch up and combine digitized images without sacrificing resolution or color. You can even work on multiple screens in different display modes simultaneously, and your pictures can be as large as your computer's memory can accommodate.*

***Colors** helps you process your existing pictures. Whether you need to change the colors, convert display modes, or resize the picture, **Colors** makes it straightforward. You can upgrade your art from Low Resolution to Hold and Modify Interlaced display mode without any fuss.*

***Posters** prints your pictures in any size up to 100 square feet, and it can anti-alias while it prints. You'll be amazed at the quality of the printouts.*

We've mentioned only a few of the things you can do with these programs, and in a moment, you'll see for yourself just how powerful DeluxePhotoLab is.

ABOUT THE MANUAL

We realize that you don't want to spend a lot of time reading a manual. You just bought some great software, and you want to get started with it right away. This manual is organized so you can use only as much of it as you need, and so you can learn to use DeluxePhotoLab at a pace that suits you best. Understanding how the manual is organized will help you get the most from it in the least time, so be sure to read the next few paragraphs.

The first thing you'll notice is that the manual is divided into five major sections.

The first section contains a general table of contents, this introduction, and a Getting Started section, which covers the absolute fundamentals everyone should know.

The next three sections cover **Paint**, **Posters**, and **Colors** as separate programs. When you are using one of the programs, you can turn to the section of the manual that applies to it to find information quickly. Each of these sections contains a Guided Tour, for those who want a structured introduction to the program's features, and a Reference, for information about specific features. The **Paint** and **Colors** sections also contain Tutorials that explain the more powerful and complex features of each program. It isn't necessary to use all chapters for each program, but the more chapters you use, the more likely you are to get the most out of the programs.

The last section of this manual contains the Appendices and an Index. The index is a valuable tool for finding information quickly.

This chapter is designed to get you up and running quickly. To that end, we tell you only the essentials. We recommend that all users read through this chapter to make sure you have all of the necessary hardware and software. You'll also learn how to start a program, how to load a picture, and how to quit a program.

GETTING STARTED

SOFTWARE

Your **DeluxePhotoLab** package contains two disks: the *program disk*, containing three programs (**Paint**, **Posters**, and **Colors**) that give you everything you need to perform high quality painting and image processing, and the *art disk*, a collection of images you can use in your work and as you learn to use the programs. These images are stored in two drawers, labeled according to the display mode (HAMx400 or HAMx200 — HAM is an abbreviation of Hold And Modify) of the images they contain. As you will see shortly, you access these images by first specifying the drawer, and then specifying the image. You can save your work to disk in the same way.

HARDWARE

To use **DeluxePhotoLab** you will need an Amiga with at least one megabyte of random access memory, a monitor, and some initialized blank disks for saving your work. Finally, if you intend to print the files you create using either the printing function in **Paint** or by creating a poster with **Posters**, you will need a printer. Consult your Amiga Users Guide for information about connecting printers and other peripherals to the Amiga.

ORGANIZING YOUR DISKS

We assume that you already know how to copy disks, how to delete files, and how to move files from one disk to another. If you are not familiar with all of these procedures, we suggest you consult your Amiga Users Guide before going any further.

- The first thing you should do is to make one or more working copies of your **DeluxePhotoLab** disks to reduce the chance of anything happening to the original. Your Amiga Users Guide has information on making copies. We will be looking at some of the pictures on the art disk in the Guided Tours and Tutorials.

You will need one or more blank initialized disks handy for saving your work. Your Amiga Users Guide has information on initializing disks.

INSTALLING ON A HARD DISK

If you own a hard drive, you will probably want to install **DeluxePhotoLab**. The following steps assume that you started the computer with a standard Workbench that has been configured properly to support a hard disk. If you wish to install the program using some other method, feel free to do so.

- Create a Drawer named **DeluxePhotoLab** on your hard disk

(Click the Empty Drawer icon to select it. Choose Duplicate from the Workbench menu. In a moment, a new drawer is created called "copy of Empty." Click the "copy of Empty" drawer to select it. Choose Rename from the Workbench menu. Press Del several times to erase the drawer name. Type "DeluxePhotoLab" and press Return. You now have a drawer named DeluxePhotoLab.)

- Insert the **DeluxePhotoLab** program disk into a disk drive.
- Double-click the program disk icon to view the contents of the disk.
- Click the **Paint** icon. Then hold down the **Shift** key and click the other two program icons — **Colors**, and **Posters**. You now have all three programs selected.

- Hold down the **Shift** key and drag the three icons so that the one you are pointing to is directly over the **DeluxePhotoLab** drawer icon. Release the mouse button. Now the Workbench copies the three programs into your hard disk drawer.
- Replace the program disk with the **DeluxePhotoLab** art disk.
- Double-click the art disk icon to view the contents of the disk.
- Drag the HAMx200 and HAMx400 icons onto the **DeluxePhotoLab** drawer icon the same way you dragged the program icons above.

You now have copies of the three **DeluxePhotoLab** programs and the two art drawers on your hard disk.

POWER UP

When you're ready to begin, just follow these instructions:

- Turn on the computer and monitor. (Amiga 1000 users, start by inserting the Kickstart 1.2 disk in the internal disk drive before turning on the computer.) When the request for the Workbench disk appears on the screen, insert your working copy of the **DeluxePhotoLab** program disk.

The drive will spin for a few seconds, and then the **DeluxePhotoLab** disk icon will appear on the right side of the screen.

- Double-click the disk icon (move the pointer onto the icon and click the left mouse button twice in rapid succession) to open the disk window.

The disk window opens to reveal icons for the three programs in DeluxePhotoLab (**Paint**, **Colors**, and **Posters**) plus the Amiga Preferences program.

STARTING A PROGRAM

To start one of the programs, simply double-click that program's icon. Right now let's start **Paint**, so we can show you how menus work, and how to load a picture. (If you are an experienced Amiga user, you can simply start the program and skip down to the description of the Load Requester, so you'll know how to get the most out of it.)

- Double-click the **Paint** icon, the triangular icon with a hand holding a paint brush in the center.

When you start **Paint**, the program presents a *requester* (a window that requires some input from you) inviting you to select a display mode. This requester (the Display Mode Requester) is explained in the first chapter of the **Paint** section of this manual. The default settings, the ones the program automatically uses unless you specify otherwise, are displayed in the requester (Low Resolution, Non-Interlaced, 5, and Full). We'll look at some of the other options in the **Paint** section of the manual. For now, we'll use the default settings.



Figure 1.1 Display Mode Requester

- Click **Open** with the left mouse button to tell **Paint** to use the default settings.

This last command brings us to the Painting Screen, with the large painting area and the Palette and Toolbox at the top.

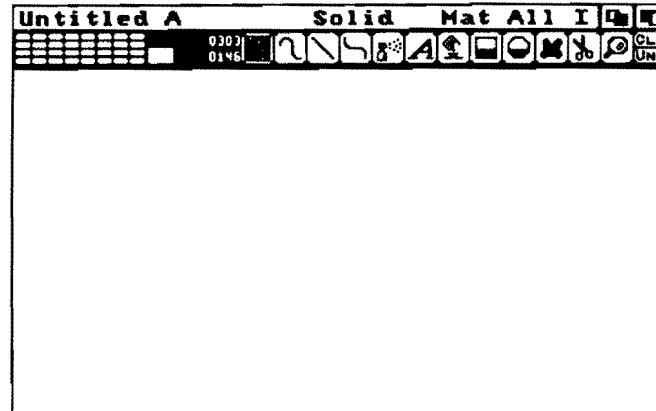


Figure 1.2 The Painting Screen

THE MENUS

The menus in **Paint** work just like other Amiga menus: point to the Title Bar and press the right mouse button to display the Menu Bar. Then, point to a menu name to open that menu. Finally, drag the arrow down to one of the menu options and release the mouse button to select that option. Let's try it.

- Point to the Title Bar and hold down the right mouse button to reveal the Menu Bar. Point to the Project Menu to display its options. Now drag the pointer down to the About option near the bottom of the menu. (Notice that as you drag, the option you are pointing to becomes highlighted. This lets you know exactly which option you are pointing to.) Finally, release the mouse button. A requester appears, showing the programmer's name and the copyright information for **Paint**.

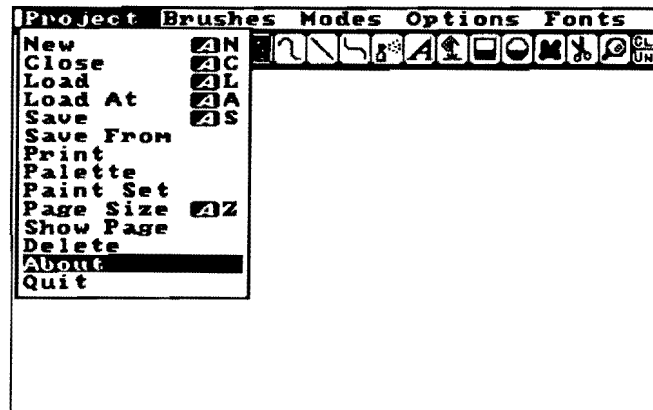


Figure 1.3 Project Menu open with About selected

You've just selected the About option from the Project menu. In the future, that's how we'll write the instruction: "Select About from the Project menu."

- Click Cancel to close the About box.

Some menu options present submenus to the right side of the option. In these cases, you can drag the highlight down to the option to display the submenu, then drag the highlight to the right and down again to select an option from the submenu.

LOADING A PICTURE

Before you move on, let's load a picture so you can see how the Load Requester works. As an example, we'll load the picture called Airwar.

- Select Load from the Project menu to bring up the Load Requester.

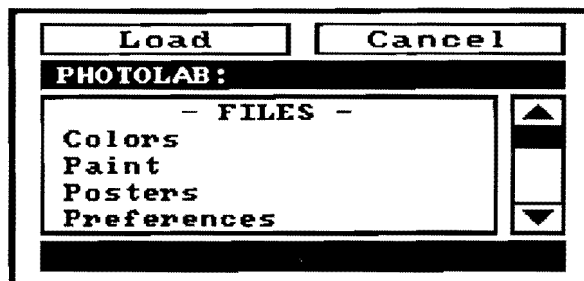


Figure 1.4 Load Requester

In the middle of the Load Requester is a list of files, directories, and volumes. You can scroll through these file names (not all of them are always visible at one time) by dragging the scroll box (the small rectangle within the dark vertical column on the right side of the requester) up and down. Just point to the scroll box, press the left mouse button, and drag it up or down.

You can also scroll through the file listings one at a time by clicking on the up and down arrows, or you can scroll one page at a time by clicking in the areas above and below the scroll box. Incidentally, note that the size of the scroll box is a function of the number of file names in that particular directory. For example, with a large number of file names, the scroll box is relatively small, to show that the ones currently visible are only a small percentage of the whole. On the other hand, if all the file names are visible at one time, the scroll box will fill the entire column.

Above the file list you see an edit field that displays the current volume and directory names. This box is called the Path gadget. (By using directories, to classify your pictures, you can keep related images together, in the same way you keep related papers together in one file folder. See your Amiga manual for information on creating directories, also called drawers on the Amiga.) In this case, the setting is PhotoLab:, which means that you are in the root directory of the PhotoLab disk. There is a second edit field below the file list for entering the name of the file you want to load.

- If you are using only one disk drive, eject your working copy of the **DeluxePhotoLab** program disk and replace it with your working copy of the art disk. (If you are using two drives, put your art disk in the external drive, press **v** on the keyboard — this keyboard equivalent displays the volumes in the file list — and click the volume name of your art disk, **PHOTOLAB ART:**.)
- Now press **d** on the keyboard to display the list of directories. Click the directory **HAMx200**.

In a moment, this directory name is added in the Path gadget and the contents of the directory are displayed in the file list.

- Now click the file named **Airwar** (the file name appears in the File gadget) and click **Load**.

The disk drive will spin for a few moments and the **Airwar** picture gradually appears on the screen. (This load will take longer than normal, because the picture you are loading is actually saved as a **Hold and Modify** image with 4,096 colors, and it must be converted during the load process to display the picture in only 32 colors. Later, be sure to load the picture again to see what a difference an extra 4,064 colors can make.)

QUITTING A PROGRAM

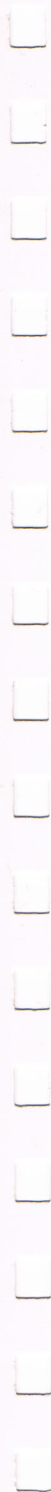
When you are finished using a program, you can exit by selecting **Quit** from the **Project** menu. In all three programs, the **Project** menu is the first menu on the left end of the **Menu Bar**, and **Quit** is at the bottom of the **Project** menu. If you've made changes to a picture using **Paint** or **Colors**, and then select **Quit** without saving your changes, a requester asks if you want to save your changes before quitting the program.

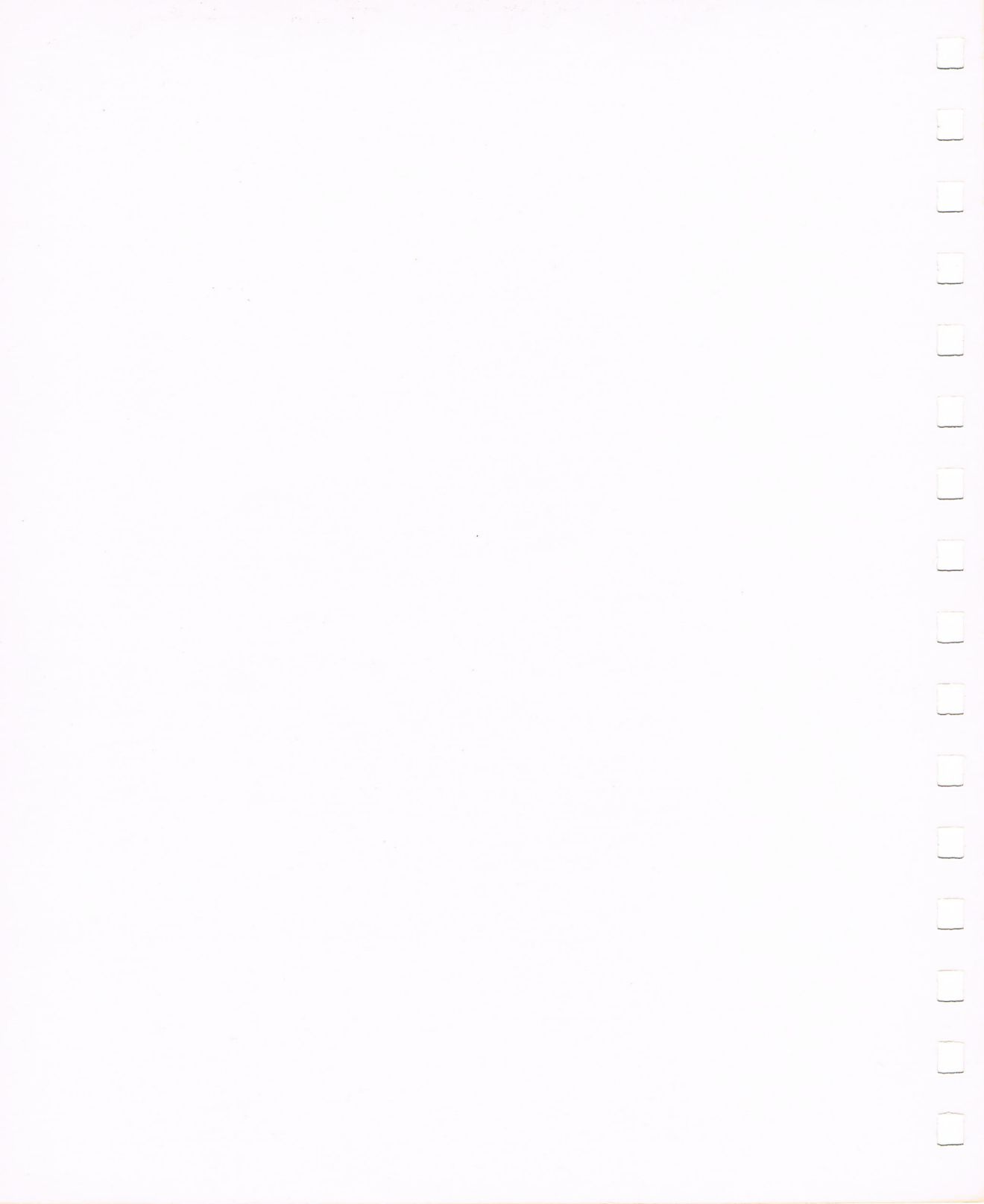
Now that you've seen how to start a program and load a file, you might want to explore the features of each program on your own. The Reference section for each program will answer any questions you might have. If you'd like to be introduced to the features in a more structured manner, with explanations along the way, work through the Guided Tour for each program. After that, if you want to learn even more about a program, work through the additional chapters. This manual was organized so you can use only as much as you need, but keep in mind that the more you read, the better you will understand each program.



NOTES

PAINT





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This section of the manual tells you everything you need to know about Paint, the multiple display mode painting program included in DeluxePhotoLab. If you are familiar with DeluxePaint, you'll find that the tools, menu options, and in some cases keyboard equivalents are much like those in DeluxePaint. If you are an experienced DeluxePaint user, you may want to jump right in and begin using Paint and look in the Reference section for answers to any questions you might have. However, even experienced DeluxePaint users will benefit from reading sections of the manual that explain the Paint Modes, which help you create paint effects in HAM display mode. The tutorial section explains some of the painting options and gives suggestions for their practical use.

WHAT YOU'LL NEED

To complete this guided tour, you'll need your working copies of the **DeluxePhotoLab** program disk and art disk. If you want to save your work, you'll need an initialized disk with a fair amount of available space for saving large files.

SELECTING A DISPLAY MODE

When you start Paint, the first thing you see is the Display Mode Requester.



Figure 2.1 Display Mode Requester

This requester lets you select the display mode you want to work in. To change the settings in this requester, click the appropriate area. Right now we'll show you how the gadgets work. In Chapter Two, "The Elements," we'll explain each of the display modes in more detail.

- Point to the words Low Resolution and click once.

Each time you click the top half of the Screen Type gadget, it cycles to the next setting. **Paint** supports all Amiga display modes: Low Resolution, High Resolution, Extra HalfBrite, and Hold and Modify (HAM). In addition, each of these modes can be either Interlaced or Non-Interlaced.

- Click Non-Interlaced.

Each click on the bottom half of the Screen Type gadget toggles the selection between Non-Interlaced and Interlaced.

The Depth gadget lets you select how many bit planes (and thus how many colors) the display mode uses. The number of planes you can select depends on the Screen Type you selected. (Appendix B: Amiga Display Modes explains how the number of bit planes is related to the display modes and the number of colors available.)

- Click the top half of the Screen Type gadget several times and watch as the Depth setting changes.

When you select a screen type, the Depth setting is automatically changed to the maximum number of bit planes supported by the screen type. You can change the Depth setting to fewer bit planes as long as the setting is supported by the screen type. The Depth gadget restricts you to the acceptable settings. Let's take a look at how this affects a couple of screen types.

- Set Screen Type to Hold and Modify. Click the number below Depth. In Hold and Modify mode, the screen can have either 5 or 6 bit planes.
- Now set the Screen type to Low Resolution and click the Depth gadget. In Low resolution, the screen can have 1 to 5 bit planes.

Finally, the Size gadget lets you select whether the page size will use the full screen or only the top 3/4 of the screen. This is especially useful if you want an extra screen to cut and paste to, but want to conserve on memory.

- When the Display Mode Requester shows the settings you want to use, (for now, set the Screen Type to Low Resolution Non-Interlaced with a depth of 5 bit planes and a full size screen) click OPEN to open a screen in that format.

THE PAINTING SCREEN

Now that you've started **Paint** and selected your screen format, you are presented with the Painting Screen. Along the top of the screen are the Title Bar, Palette, and Toolbox.

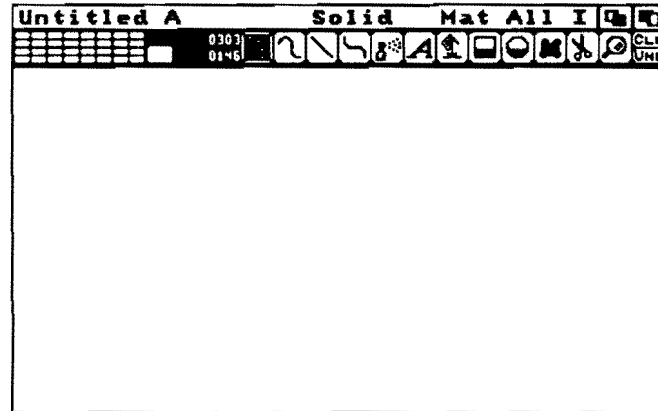


Figure 2.2 The Painting Screen

The area below the Toolbox is where you work on your pictures. This area is called the *page*. The normal page size is the same as the screen size, but in the next chapter you'll see that you can make the page much larger. When your page is larger than the screen, you can scroll the page by pressing the arrow (cursor) keys on the keyboard. When you use the arrow keys, think of them as moving the screen rather than the picture; pressing the down arrow moves the screen down, so it looks like the page is moving up.

THE TITLE BAR

The Title Bar lists the name of your picture (in this case **Untitled A**). It also lists the current settings in the Modes menu and whether you are using a custom brush or a built-in brush. At the moment, this information probably doesn't mean anything to you, but as you become familiar with the program, you'll find that the information in the Title Bar can save you a lot of time.

THE MENUS

The menus in **Paint** work just like other Amiga menus: point to the Title Bar and press the right mouse button to display the Menu Bar. Then, still holding down the mouse button, point to a menu name to open that menu. Finally, pull the highlight down to one of the menu options and release the mouse button to select that option.

THE PALETTE

The upper left area of the Painting Screen contains the Palette where you select the color you want to paint with. The number of colors in the Palette depends on the display mode you are using. Note that the painting area below the Palette is black. This is the default *background* color. If you were to paint with the background color directly onto the background, it would appear to have no effect, as if you were putting black paint onto a black canvas. As you'll see in a moment, painting with the background color is a way of erasing an image on the page.

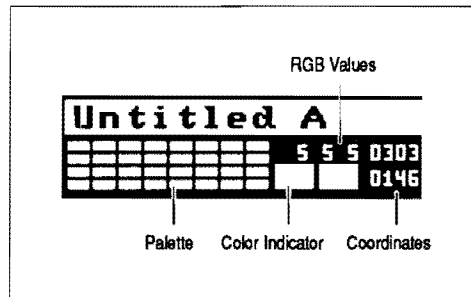


Figure 2.3 Palette and Indicators

To the right of the Palette is the Color Indicator, two rectangles side by side. The left rectangle shows the *foreground* color. You can change this color at any time by clicking one of the other colors in the Palette with the *left* mouse button. Try it.

- Move the pointer to one of the colors in the Palette and click.

Notice that the left rectangle of the Color Indicator changes to show the new foreground color. Click the other colors and see how the Color Indicator changes each time. Also notice that numbers appear above the Color Indicator when you click on a color for the first time, and these numbers change each time you click a different color. These numbers show you the RGB (Red, Green, and Blue) values of the color you clicked most recently. We'll say a lot more about RGB values later in the manual, for now, just remember that the values are listed above the Color Indicator.

The right rectangle in the Color Indicator shows the current background color.

- To change the background color, move the pointer to one of the colors in the Palette and click the *right* mouse button.

Notice that the right rectangle in the Color Indicator is now filled with the new background color; the painting area itself is still the old background color. Paint lets you maintain the old background color as a "wash" over the new background color, and will keep it there until you clear the painting area. Try it now.

- Click the button labeled CLR in the top right corner of the screen. This clears the screen of the old background color and replaces it with the new one.

Before you do anything else, let's look at one of the most important tools in the Toolbox, the UND button. Located just below the CLR button, the UND button will generally "undo" your last painting action.

- Click UND now to bring back the old background color.

UND reverses your last action, provided there has not been an intervening mouse click; if you were to click CLR twice, for example, clicking UND would not reverse the clear command.

PAINTING WITH THE MOUSE

Now that you've seen how to choose colors from the Palette, let's put brush to paper and create our first free form painting.

- Select a foreground and background color by clicking with the appropriate buttons on the Palette. Choose contrasting colors such as light blue for the foreground and gray for the background.
- Click CLR to cover your page with the background color.
- Move the pointer over to the page (where it turns into a cross-hair) and, while holding down the left mouse button, paint an image on the screen. (If you've already played with some of the tools, make sure that the first tool in the Toolbox is highlighted.) Don't worry about quality for the moment — a squiggly line or a rough circle will do.
- Now press the right mouse button and paint over your first image.

Note that the right mouse button has the effect of erasing your painting, although what you are actually doing is painting over it with the background color. Notice that this parallels the rule we noted above for selecting colors from the Palette: select the foreground color by clicking with the left button and the background color by clicking with the right button.

Before we move on, let's scroll the page a bit so you see how this works.

- Draw a little scribble on the screen so you'll be able to see it move. Now press the down arrow on your keyboard to move the screen down to see lower on your page.

As we mentioned earlier, the page is normally the same size as the screen. You're able to scroll it up and down a little right now, because the Menu Bar and Toolbox are hiding part of the page. If your page were wider, you would be able to scroll it sideways also.

COORDINATES

You might have noticed that as you painted on the screen, the numbers to the right of the color indicator changed. These numbers show you the current position (the coordinates) of the cross-hair, and thus the position of your brush.

When you are not pressing a mouse button, the Coordinates show you the position of the brush relative to the upper left corner of your page. The top number shows you the number of pixels from the left side of the page. The bottom number shows you the number of pixels from the top of the page.

If you press a mouse button, the Coordinates reset to +000 and +000. As you move the brush, the Coordinates show positive numbers for the number of pixels the brush has moved to the right or down from its original position. Negative numbers indicate the number of pixels the brush has moved to the left or up from its original position.

PICKING COLORS FROM THE SCREEN

So far you've been selecting your colors by clicking the colors in the Palette. If you like, you can also select your colors directly from the screen. This is useful if you are working on fine details, or if you are working with many shades of the same basic color. For example, if you are painting a rose and are using eight different shades of red, it might be easier to pick the color you need directly from the screen where you are working.

- To do this, click the Color Indicator and move the pointer back to the screen. The pointer is labeled "Pick." Point to a color on the screen and click either the left or the right mouse button to select a new foreground or background color. (An even easier way to select a color from the screen is to use the keyboard equivalent. Press the comma (,) key to get the Pick pointer and then click a color.)

Practice painting with the mouse for a while and try selecting colors from the screen. Remember, you can always click UND to reverse your last action, or CLR to clear the screen and start afresh. As soon as you're ready, move on to the next section, where we will be examining Paint's collection of brushes and tools.

THE BUILT-IN BRUSHES

So far you've been painting with the single pixel brush that's selected when you first load **Paint** (a pixel, short for picture element, is the smallest unit observable on the screen). **Paint** includes sixteen built-in brushes: four square ones, four round ones, and eight diagonal lines. The built-in brushes are in the Shapes option of the Brushes menu. This is an example of a menu item that presents a submenu.

- Open the Brushes menu and pull the highlight down to Shapes; a submenu of brush shapes appears. Now pull the highlight to the right and select one of the brushes. When you release the mouse button, the new brush is attached to the cross-hair.

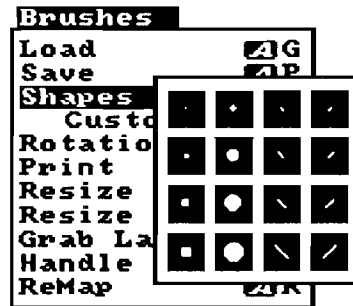


Figure 2.4 The Built-In Brushes

With your new brush selected, paint as before, using the left button to paint with the foreground color and the right button to paint (or erase) with the background color. In the next section we will look at the painting tools and how they interact with the brushes.

THE TOOLBOX

The fourteen icons along the top right portion of the Painting Screen control the painting tools. Because any brush can operate with any given painting tool (except the Text tool), you have a wide variety of combinations at your fingertips.

- To select a tool, click it with the left mouse button.

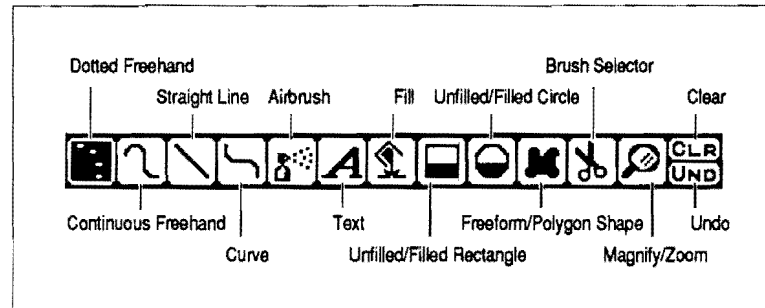


Figure 2.5 The Toolbox

We'll describe the tools in order, moving left to right:



THE DOTTED FREEHAND TOOL allows fast freehand painting with a built-in brush. No matter how fast you paint with this tool, it tries to keep up with you; this makes it ideal for sketching out a shape quickly before concentrating on the intricate details. Note, however, that the faster you go, the bigger the gaps in your painting. Once you have roughed out a shape with the Dotted Freehand tool, you can then refine your image using some of the other tools. Try painting with it using different size brushes to get a feeling for how it works.



THE CONTINUOUS FREEHAND TOOL. Because it produces unbroken lines, but doesn't keep up with you if you paint quickly, the Continuous Freehand tool is better suited for slower, more painstaking painting. Note, however, that the smaller the brush, the better it is at keeping up. Try it with different brushes to see how brush size affects speed.



THE STRAIGHT LINE TOOL lets you paint straight lines just by clicking and dragging the mouse. Here's how it works:

- First, click the Straight Line tool to activate it. Then move the cross-hair to the point on the page where you would like the line to begin.
- Now press the left mouse button to anchor the line at that point, and, while holding the button down, drag the mouse to the point where you want the line to end.

When you release the button, you have a straight line in your selected foreground color and brush size.



THE CURVE TOOL paints curves that can be defined by four points, such as S-curves. It works much like the Straight Line tool except that it requires one additional mouse click to complete the curve. Here's how:

- First, anchor the first point of the curve by pressing the mouse button. Drag it to the point where you want the curve to end, and release the button.

Now, you've defined the two endpoints of the curve. As you move the mouse away from the endpoints, you'll notice that the line is still "active," behaving as though it were a rubber band attached to the cross-hair. Accordingly, the line will curve to follow the cross-hair wherever you drag it.

- Drag the line until the arc for the end half of the S-curve is the shape you want.
- Then hold down the mouse button and move the cursor to the other side of the line, to form the beginning half of the S-curve. Release the mouse button to complete the curve.

With a little practice, you'll be able to make curves of any shape and size, giving you much more flexibility than any collection of plastic templates with their limited selection of shapes and sizes. Try joining a series of curves to make flowing shapes with changes in curve direction.



THE AIRBRUSH TOOL is a full-featured airbrush with adjustable tips and nozzles. By using the Airbrush in combination with the different brushes, you can create a variety of effects, ranging from a fine one-pixel spray to a coarse spray made with the big brushes. In the following chapter we will see how to adjust the width of the spray, but for now let's try it as is.

- Click the Airbrush tool with the left button, and then try painting with it using the various brushes.

Try it with the single-pixel brush, and then try it with the big brushes. Note that, just like a regular airbrush, if you keep the mouse button pressed without moving the mouse, the paint continues to build up in one spot.



THE TEXT TOOL lets you enter lines of text anywhere on the screen in whatever color you choose.

- Click the Text tool and place the small rectangular cursor on the page by clicking it down. Now type a line of text.

The letters you type appear in the current foreground color. If you make a mistake, you can backspace on the same line and type again. You can press Return to start a new line directly below the point where you first placed the cursor. However, once you press Return, or click the mouse again, your text becomes part of the picture, and you can no longer backspace over the text. If you type several lines by pressing Return between lines, and then find that you made a mistake in one of the lines, you can remove all of that text by clicking Undo before you click anywhere else on the screen.

You can select different fonts and styles for your text by selecting them from the Fonts menu. We'll say more about this in Chapter Two, but if you like, experiment by selecting different fonts and styles from the menu.



THE FILL TOOL fills any enclosed shape with the current foreground or background color.

- To use the Fill tool, click the icon with the left button, move the cursor (which now looks like a paint can) to an enclosed shape, and click one of the mouse buttons.

Note that the Fill tool fills all the way to the boundaries of an enclosed shape. If the shape is not completely enclosed (that is, if there is a hole in its perimeter), the paint will "leak" through and fill the entire page. If this ever happens, you can stop the filling process by pressing the **Spacebar**. This aborts the current Fill command and returns the screen to its pre-command state.

The paint can's spout — the part you must put inside the enclosed shape — is the small (one-pixel) dot at the base of the icon. With careful maneuvering, you can fill a space as small as one pixel, so long as the spout coincides with that space.



THE RECTANGLE TOOL lets you paint squares or rectangles, either unfilled or filled with the current foreground or background color. Note that the rectangle icon is painted in two halves when it is not selected. This is because it is actually two tools in one — the top one creates unfilled shapes, while the bottom one creates shapes filled with the current foreground or background color.

Let's try making a few rectangles.

- Click the top half of the icon with the left mouse button. Move the pointer onto the painting area (where it changes into a cross-hair), press the left mouse button to anchor one of the corners of the rectangle, and, while holding the mouse button down, drag the mouse away from the anchor point.

You can drag the mouse down and to the right (in which case the first button press anchors the rectangle's top left corner), or in any other direction you wish. In any case, the rectangle is completed as soon as you release the button. Note that it is unfilled and bordered by the current foreground color. You can also create an unfilled rectangle bordered by the background color by using the right mouse button. First, click another color on the Palette with the right mouse button, and then make a rectangle using the right mouse button.

- To create a filled rectangle, click the bottom half of the Rectangle icon with the left mouse button and repeat the above procedure.

This time, the rectangles you create will be filled with either the foreground or the background color, depending on which mouse button you press when you create the rectangle. Incidentally, if you hold down the **Ctrl** key as you paint, you can constrain the rectangle so that its height and width are equal. (Note: Because the Amiga's pixels are not perfectly square, "constrained" rectangles will not appear exactly square on the screen.)



THE OVAL TOOL works like the Rectangle tool:

- Click the top part of the icon with the left mouse button to get an unfilled shape, or the bottom part to get a filled shape. Move to the painting area, then press and drag with the left button to create an oval with the current foreground color, or with the right mouse button to create an oval bordered or filled with the current background color.

If you hold down the **Ctrl** key as you paint, you can constrain the oval so that it is a circle.

When you first load **Paint**, ovals are painted from corner-to-corner as you drag the mouse. This means that the oval is painted to fit the rectangular area defined by your mouse movement. The Center Ovals option lets you paint your ovals and circles from the center outward. This option is located in the Preferences submenu of the Options menu. For more information on this option, see the discussion in the **Paint** Reference section under Options Menu.



THE FREEFORM SHAPE TOOL lets you paint a filled freeform shape, or a filled polygon. Here's how it works:

- To paint a filled freeform shape, click the top half of the tool with the left mouse button to select a freeform shape. Paint your freeform shape just as you would with the Continuous Freehand tool. When you release the mouse button, the shape you drew is filled with either the current foreground color or the current background color, depending on which mouse button you used to draw the shape.

Note that if the cross-hair is not at the starting point of your shape when you release the mouse button, the shape is completed with a straight line from the cursor position to the starting point.

- To paint a filled polygon shape, click the bottom half of the tool with the left mouse button, move the cross-hair into the painting area, hold down the button and drag to paint the first line, as if you were using the Straight Line tool. This time, however, you will notice that your cross-hair is still connected to the first line by a second straight line.

- Click the button again to finish that line, and so on until you have completed your polygon. The polygon is completed as soon as you click the button with the cross-hair on your starting point.

Because it can sometimes be a little tricky to end up on the exact pixel you started with, you can complete a polygon at any time by clicking twice without moving the mouse button between the clicks. This automatically connects the current cursor position to the point of origin and fills the polygon with the current foreground or background color, depending on which mouse button you used to start drawing the polygon.

- Try painting some five-pointed stars with the Filled Polygon tool and see what happens.



THE BRUSH SELECTOR lets you select any part of your picture as a brush.

- To see it in action, click the top half of the scissors icon with the left mouse button, then move the cursor over to the painting area.

Notice that your cursor is now a large cross-hair that reaches to the edges of the screen.

- Select one of the stars you made earlier by putting the center of the cross-hair to the upper left of the star. Then, while holding down the left mouse button, drag the cursor to the lower right of the star, as if you were using the Rectangle tool to enclose the star in a box. When you release the mouse button, the cursor now has a copy of the star attached to it.

This second star is your new brush! To stamp a star in a new location, click the left mouse button. There's no need to stop with one — go ahead and star-spangle the screen. We will be covering this powerful feature in greater depth in the next chapter. For now, however, there is one aspect of brush selection you should be aware of: if any parts of your brush consist of the current background color, those parts will be transparent. In other words, whenever you pick up a brush, it's as if you are picking up only the non-background colors; any background colors in the brush will remain invisible even after you change to a new background color. This means that you can create brushes with intricate outlines without fear of picking up a rectangle of the surrounding background color.

(Note: Whether or not the background color is picked up with the brush is controlled by the Transparency option in the Preferences submenu of the Options menu. When you first start **Paint**, the Transparency option is on. If you want to pick up the background color, turn the Transparency option off by selecting it.)

Let's try one more trick.

- Click the Brush Selector again and select a star from the painting area, but this time use the right mouse button to drag the cross-hair over the star.

Unlike the last exercise, which yielded two stars — one unmoving original, plus the one on your brush — this time you are picking up and moving just the one star. While the first feature lets you copy and move anything on the screen, the second lets you move images from one part of the screen to another, while leaving no trace behind.



THE MAGNIFY TOOL lets you magnify any section of your work, and view it alongside the standard-sized image.

- To magnify a section of your work, click the Magnify icon. When you move the cursor onto the page, it becomes a rectangular outline. Move the outline to the part of the image you want to magnify, and click the mouse button.

The part of the image included in the rectangle now appears magnified on the right part of the screen. The left part of the screen shows the image in its original, unmagnified form. Another way to enter the Magnify mode is to move your cursor to the area you want to magnify, and press the **m** key.

You can now perform any function on either side of the screen using any of the tools in the Toolbox. Thus, you can paint circles and squares, fill in shapes using the Fill tool, and use any of the brushes normally available to you. Using the four arrow keys, you can move the image around under the "magnifying glass." In addition, by pointing your cursor anywhere on the unmagnified or magnified portion of the screen and pressing the **n** key, you can center that part of the picture in the magnified area.

Once you've magnified a part of your picture, you can increase or decrease the amount of magnification by using the Zoom tool (the Zoom icon is the bottom half of the Magnify icon once magnify is activated).

- Click Zoom with the left mouse button to increase the magnification (zoom in); click with the right mouse button to decrease the magnification (zoom out).
- To quit Magnify mode when you have the magnified area on the screen, click the Magnify tool (the top half of the icon) a second time.

SAVING YOUR WORK

Before moving on to the next chapter, where you'll get a closer look at some of Paint's elements, let's see how to save and load the pictures (or "files") you create.

In the Getting Started section of this manual, we showed you how to load a picture. Saving a picture works much the same way.

- The Save option for pictures is in the Project menu. Selecting Save brings up the Save Requester, which works exactly like the Load Requester, except that clicking Save saves your picture to disk.

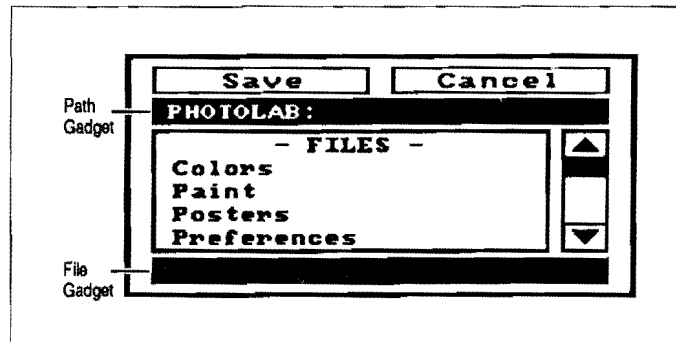


Figure 2.6 Save Requester

If you want to save your current creation, this is your chance to do so.

- If you are using only one disk drive, eject your working copy of the **DeluxePhotoLab** disk and replace it with your data disk. Now click anywhere in the File gadget, type in the name you have chosen for your new file, and click Save.

If you are using two drives, put your data disk in the external drive, press v on the keyboard — this keyboard equivalent displays the volumes in the file list — and click the volume name of your data disk. Now click the File gadget and type the name for your file. Click Save to complete the process.

The disk drive will spin for a few moments; when the red light goes out, the file is saved.

The next time you save this file (it's a good idea to save work in progress every 15 minutes or so, so that a power failure doesn't turn hours of work into a bitter memory), the Save requester uses this same information, which means you won't need to type anything more unless you want to change the file name. You might want to do this to save it under another name, if you want to save each version as a separate file. In that case, you would click the file gadget as before, backspace over the old file name (or over those parts you want to change) and type in the new name. Or you could just keep adding suffixes, such as 1, 2, 3, etc., to signify succeeding versions.

OPENING A SECOND SCREEN

One of the very useful features of **Paint**, is the ability to work on more than one screen at a time. Even more important, the screens can be in different display modes. At the beginning of this chapter, you started **Paint** and opened a screen in Low Resolution. With this screen still open, you can open a second screen by selecting New from the Project menu.

- New in the Project menu brings up the Display Mode Requester, for you to select the display mode for your new screen. Set the Screen Type to Hold and Modify, Interlaced mode and click Open.

In a second, you have a second screen open in Hold and Modify mode. You can confirm that your original screen is still open by pointing to the Title Bar, holding down the left mouse button, and pulling down the screen to see the ones beneath it. Your original screen is behind the Palette Screen, so you'll need to pull the new screen all the way to the bottom to see the old one. Click the Front and Back gadgets (the small overlapping squares in the upper right corner of each Amiga screen) to move to a different screen when you need to.

The active screen is always the last screen you clicked on. So, if you wanted to make your original Low Resolution screen the currently active screen, pull down the HAM screen and click the Low Resolution screen. Now your Low Resolution screen is the current screen. This is particularly important when working with the Palette Screen, because changes to the Palette affect the currently active screen only. (We'll explain the Palette Screen in detail in the next chapter.)

LOADING A PICTURE

Now that we've seen how to save a file, and how to open a new screen, let's see how to load one of the pictures on the Art Disk. Let's load the one called Astronaut. (If you worked through Getting Started, you already know how to do this. Try it without following the instructions to see how much you remember. You can always check the instructions if you get stuck.)

- First, make the HAM screen the current screen by clicking on it, then insert your working copy of the **DeluxePhotoLab** art disk in your drive and select Load from the Project menu. (If you have two disk drives, put the art disk in the second drive. When the Load Requester first appears, press V on the keyboard to display the volumes and click the volume PHOTOLAB ART.

Note that the Load Requester is just like the Save Requester in almost every respect.

- To load a file, open the directory you want by clicking on the directory name (in this case, HAMx400). Then simply click the file name in the requester window to put that name into the File gadget. Try it. Click any name and watch it appear in the File gadget. Now click another name and watch it change. When you're ready, click the file Astronaut, and then click Load.

The disk drive will spin for a few moments, and then the picture will appear on the screen.

RESIZE DRAW

Before we move on to the next chapter, where we'll take a closer look at the various elements of **Paint**, let's take a quick look at one of **Paint**'s powerful brush features. You've already seen how to select a custom brush. Right now, we'll select the astronaut as a custom brush and then paint a copy of him inside his helmet. Here's how it works:

- Click the bottom half of the Brush Selector tool to get the freehand selector.
- Press **F9** and **F10** on the keyboard to remove the Title Bar and Toolbox.
- Now, trace the outline of the astronaut while holding down the left mouse button to select the entire image as a brush. You don't need to be exact in your tracing, just cut him out quickly. When you release the mouse button, you have the astronaut as a brush.

You probably won't be able to see the brush itself because the two screens and the brush are using up a lot of memory, but **Paint** allows you to select this large brush anyway, and shows you how big it is by displaying a rectangle of the same dimensions. In the next steps you'll paint the brush into the helmet.

- Press **F9** again to bring back the Title Bar, and select **Resize Draw** from the **Brushes** menu.

When you move the pointer back to the painting, you'll see that it is now a large cross-hair like the one you use to select a brush. It works the same way, except that this option lets you select the area you want to paint the brush into, and then puts the brush in that area in the proper size.

- Move the cross-hair inside the helmet, hold down the left mouse button, and drag down and to the right to form a rectangle with the cross-hair that fits inside the helmet. Release the mouse button.

In a moment, you'll see a small astronaut drawn inside the helmet. As though the large astronaut was looking at a companion astronaut, and you are seeing the companion's reflection in the faceplate of the helmet.

This chapter showed you some of the basics of **Paint**. In the next chapter, we'll look at some of the more powerful features. In particular, we'll introduce you to the Painting Modes in the Mode menu and show you how to use the Palette to change your color selection. Before moving on, you might want to load each the pictures on the art disk to see what is there. Appendix C, About the Pictures, contains brief explanations of how some of the pictures were created.

In this chapter we examine the fundamental "elements" that make up Paint. If you have some experience with computer graphics software, you may want to use this chapter to learn how Paint handles features you may have encountered in other programs. As with any other part of this manual, however, you should feel free to skip around and read only those sections that interest you at the time.

We have classified the elements as follows:

The Brushes examines Paint's custom brush capabilities. This part looks at the various techniques available for selecting and modifying a custom brush.

The Screen deals with those techniques that affect the entire Paint screen, such as magnifying, zooming, screen resolutions, Page Size, and Show Page.

The Palette looks at Paint's color mixing capabilities and explains the various operations you can perform in the Palette Screen.

The Tools looks at advanced tool techniques, and shows how to customize some of the standard tools to create just the right tool for the job.

The Paint Modes briefly introduces how the modes affect the way paint is applied to the page.

Text shows how to enter text, and how to move it about the page.

WHAT YOU'LL NEED

To complete the examples in this section, you'll need your working copies of the **DeluxePhotoLab** program disk and art disk. If you want to save your work, you'll need an initialized disk with a fair amount of available space for saving large files.

- To begin this section, start **Paint** and open a single Hold And Modify Interlaced screen. If you already have the program running, we recommend that you restart so that the tools and option settings are all set to their defaults.

1 THE CUSTOM BRUSHES

As you saw in the Guided Tour in Chapter One, **Paint**'s "anything can be a brush" feature lets you select any image on the screen and define it as a brush. Thus, you can keep a selection of images on a clear area of the screen (or open a second screen for your brushes) and move them over to your work area by picking them up as brushes. In addition, you can load and save brushes in their own files, just as though they were pictures.

CREATING A RECTANGULAR BRUSH

To create a brush out of an on-screen image:

- Click the top half of the Brush Selector (the scissors tool) with the left mouse button. The icon changes to resemble a pair of facing brackets [].
- Hold down the left mouse button, and drag the large cross-hair to form a rectangle around the image. When you release the mouse button, an exact copy of the image is attached to your cross-hair.

You can now paint with your new brush just as you would with any of the built-in brushes (though painting with a custom brush is noticeably slower).

You can drag the Brush Selector cross-hair to select an on-screen image using either the left or the right mouse button. As we have already seen, when you use the left button, **Paint** makes a duplicate of the image and attaches it to the cross-hair, while leaving the original image in place on the page. We also saw that if you use the right mouse button to surround the image, the image itself becomes the brush, as if the original image had been lifted up off the page. This technique provides an ideal method for picking up images and moving them around the page as you experiment with different compositions.

CREATING AN IRREGULAR SHAPED BRUSH

As we saw earlier, clicking the top half of the Brush Selector with the left button lets you draw a rectangle around any image on the page. Clicking the bottom half lets you corral any image, thereby letting you pick up shapes from a “crowded” background. To corral an image:

- Click the bottom half of the Brush Selector. It becomes highlighted but the icon remains a pair of scissors.
- Outline the image you want, just as if you were drawing around it with the Continuous Freehand tool (see “The Toolbox” in Chapter One). As soon as you complete the outline, the complex shape becomes your new brush.

Note that the left button-right button convention works here as well: corralling the shape with the left button duplicates the shape, while corralling with the right button lifts it up off the background. Note also that if you release the mouse button before you reach the starting point of your outline, a straight line from the cross-hair position back to the starting point completes the shape.

DRAWING A BRUSH

There is yet another way to select a custom brush for painting. The Grab Last option in the Brush menu takes whatever you drew in your last painting action and uses it as a custom brush. Try it out.

- Simply paint on the page and then select Grab Last from the Brush Menu. You can even paint with a custom brush and select Grab Last to create a more complex brush.

That still isn’t everything! If you hold down Shift when you select Grab Last, you’ll select what is beneath the area you painted onto. This feature lets you select complex brushes using the tools as stencils. For example, you could paint over an area with the Filled Oval tool, then select Grab Last with the Shift key to select the area as a brush. Once you have your brush, simply click UND to remove the solid circle you painted.

THE BACKGROUND COLOR IS TRANSPARENT

When you pick up a custom brush (with either the left or right button), you will notice that any part of the brush which matches the current background color appears transparent. For example, if you pick up a round image sitting on the background color, you pick up part of the background as well (because the Brush Selector picks up rectangular shapes), but when you move your new brush over to a contrasting image, the brush contours will appear round and not rectangular. This is because Paint treats as transparent any color that was designated as the background color when the brush was created, which means you can create a brush out of a complex image (such as intricate lace, for example) and be able to see through it to other images behind the brush. The transparent parts of your brush remain transparent, even after you change background colors.

There's a little more to the story than what we just told you. You can actually choose whether or not the background color in your brush will be transparent. Transparency is an option in the Preferences submenu in the Options menu. Normally, you will want to have Transparency selected as active (indicated by a check beside the option). Then you can make different parts transparent or not simply by changing the current background color. But if you are painting in HAM mode, it may be difficult to find a color that isn't used in the area you want to select. (This is especially true if you are working with a full-color digitized image.) In this case, it is much simpler to turn Transparency off, so that you can be sure of grabbing all of the image you want for your brush.

A BRUSH IS A LITTLE PICTURE

You can treat brushes just like full pictures. Brushes even have their own menu (the Brush menu, the second one from the left), from which you can Load and Save brushes just as you can other pictures. When you load a brush, it comes equipped with its own palette, the one that was in effect when the brush was saved. If the current picture is using a palette different from that of the newly-loaded brush, you can change the picture's palette to the brush's palette by selecting Use Brush from the Palette option of the Project menu. On the other hand, if you want to use the newly-loaded brush with the current palette, select Remap from the Brush menu. This is especially useful if you load a brush that was created in a display mode with a different number of colors. The other items in the Brush menu let you resize, rotate, and even print brushes.

- To load a brush, select Load from the Brush menu. This brings up a Load Brush Requester, similar to the Load Picture Requester you used when you loaded a picture in the Guided Tour (see Chapter One).

BRUSH ROTATIONS

Once you've selected or loaded a custom brush, you can rotate it in one of the four ways listed in the Rotations submenu of the Brush menu. The four rotations are:

Vert Flip (Vertical Flip)
Horz Flip (Horizontal Flip)
Rotate 90
Rotate Free

The first two options simply flip the brush either vertically or horizontally. Rotate 90, rotates the brush 90 degrees to the right. Rotate Free lets you rotate the brush any number of degrees to the right or left. Because Amiga pixels are not square, rotating the brush will also distort it.

As an example of rotation, do the following:

- Select a brush that is asymmetrical so that you will be able to tell whether or not it has been flipped or rotated. A flag and the numeral 4 are good examples of images that display any change in orientation.
- Select Rotate Free from the Rotations submenu in the Brushes menu.

Your brush changes to a rectangle with a triangle inside. The triangle indicates the top of the brush. The pointer is attached to the center of the rectangle by a line.

- Rotate the rectangle by pressing the left mouse button and moving the pointer down and to the left.

As you rotate the rectangle, it stretches and contracts to indicate the distortion to the actual brush.

- Release the mouse button.

Your brush is now attached to your pointer and ready for painting.

HANDLE

This feature, which is available from the Brush menu, allows you to specify whether your cross-hair will sit at the center of your custom brush, or at some point offset from the brush. In the default setting, the cross-hair sits at the center of the custom brush.

- After you select Handle, you can press the mouse button and drag the cross-hair to any position you like; releasing the button sets the cross-hair in that position relative to the custom brush.

2 THE SCREEN

Some of **Paint**'s features affect the entire screen, while others, such as the tools and the brushes, affect the screen selectively. This section considers those features that have a screen-wide effect.

HIDING THE TOOLS, THE MENU BAR, AND THE POINTER

Paint lets you paint on the entire screen, even under the Toolbox and the Menu Bar.

- To hide the Toolbox, press the F10 key. To hide the Menu Bar, press F9. Pressing these keys a second time displays the Toolbox or Menu Bar. By using these two keys, you can selectively display or hide either the Toolbox, the Menu Bar, or both.

When the Menu Bar and Toolbox are hidden, you can still use many of the menu options and all of the tools through the keyboard equivalents. See the Reference section of this manual for a list of keyboard commands.

When you paint with a small brush for fine details, you'll often want to hide the cross-hair, so that you can see all of the area you are working on and the exact position of the brush.

- To hide the cross-hair press F8 on the keyboard. Press F8 again to bring it back.

MAGNIFYING AND ZOOMING

As we mentioned in the Guided Tour, you can magnify any section of your work, and view it alongside the standard-sized image.

- To magnify a section of your work, click the Magnify tool (the one that looks like a magnifying glass). When you move the cursor onto the page, it becomes a rectangular outline. Move the outline to the part of the image you want to magnify, and click the mouse button.

You can move around inside the magnified area by pressing the arrow (cursor) keys on the keyboard. And you can increase or decrease the amount of magnification by clicking on the lower half of the icon (now the Zoom tool) with the left or right mouse button.

Another important feature of Magnify, is the ability to separate the pixels so you can easily identify how many pixels are in an area, or where one pixel stops and the next one starts. The Magnify option in the Options menu lets you set three magnification types: Normal sets no pixel indicator, so the pixels all merge together smoothly; Lines sets a single-pixel line between the magnified pixels; and, Dots sets a dot in the corner between magnified pixels, in addition to separating the pixels with a single-pixel line. (Note that in HAM mode, there are no vertical lines between pixels.)

- To quit magnify mode, click the Magnify icon a second time.

PAGE SIZE

In addition to the preset page sizes (320 x 200; 320 x 400), **Paint** lets you specify any height and width through the New Page Size Requester. You can call up this requester by selecting Page Size from the Project menu. The largest page size you can specify depends on the display mode you are using and the amount of memory currently available in the computer. If you try to specify a size larger than memory can accommodate, the numbers in the requester revert to their previous setting, and the requester does not close.

Note: If you are working on a page size larger than the screen, you can preview the entire page at any time by selecting the Show Page command from the Project menu. Press the right mouse button or any key to exit Show Page.

AFFECT

The Affect option in the Modes menu lets you select which parts of the screen are affected by a painting operation. The Affect option presents a submenu with three options: All, Foreground, and Background.

All is the default mode; when it is selected, all pixels in the picture are affected by your painting. If you select Foreground, only portions of the picture that are **not** in the background color are affected by your painting. If you select Background, only portions of the picture that are in the background color are affected. Since you can change the background color simply by clicking that color in the palette with the right mouse button, it is easy to select exactly which pixels you want to change in the picture. This feature is especially useful for working on pictures with a lot of fine detail.

Note that Affect does not work in combination with Resize Draw or Load At.

SHOW PAGE

If you are working on a page that is larger than the screen, Show Page lets you see a representation of the entire page at one time. There are three options for viewing the page. The first two options, Fast and Smooth, show you the entire page. You can view it quickly, as a rough approximation of the page, or you can select smoothing, to get a better representation of the picture. The Overscan option shows the amount of the page that would appear in overscan mode.

When you select the Fast or Smooth options, the area of the page that was displayed before you selected Show Page appears inside an outline. You can move this outline to another area of the page by dragging it with the left mouse button. When you return to the normal display, you will see the new outlined area on the screen.

To exit the Show Page function, press the right mouse button or press any key on the keyboard.

SCREEN RESOLUTIONS

Paint gives you a total of eight different screen resolutions (four basic resolutions, each available in either Non-Interlaced or Interlaced mode). And you can have multiple screens open at the same time in different resolutions. As we noted in the Guided Tour, you are prompted to select a screen format each time you start **Paint**, through the Display Mode Requester (see Figure 2.1). Each screen format has its own limitations and memory requirements.

The four resolution formats are as follows:

LOW RESOLUTION: This format uses a pixel array 320 wide by 200 high, and can accommodate up to 32 colors on the screen at one time. This level of screen resolution is adequate for most graphic purposes.

HIGH RESOLUTION: This format uses a pixel array of 640 wide by 200 high, using pixels that are the same height as the Low Resolution pixels, but only half as wide. High Resolution is ideal for putting text on the screen. (See the discussion of Text mode below.) Because High Resolution uses pixels of a different size and shape, changing screen formats from Low Resolution to High

Resolution will affect the shape of your images. Thus, a Low Resolution picture loaded in High Resolution mode will look skinny, while a High Resolution picture loaded in Low Resolution mode will look fat (and take up two screen widths). In addition, High Resolution limits the number of colors available for a single picture to 16.

EXTRA HALFBRITE: This display format uses the same size pixel array as Low Resolution (320 x 200), but it provides a palette of 64 colors. The first 32 colors in Extra Halfbrite are equivalent to the 32 color Low Resolution Palette. The second 32 colors are halfbrite equivalents of the first 32 colors. The Palette in Extra Halfbrite gives you access to only the first 32 colors, and any changes made to one of those colors is also reflected in the extra halfbrite equivalent.

Note: Not all Amiga 1000 computers support Extra Halfbrite. The easiest way to find out whether or not your computer supports this display mode is to try it. Open an Extra Halfbrite screen and look at the Palette (make sure the pointer is not in the Menu Bar or Toolbox). If the last 32 colors are the same as the first 32, your computer doesn't support Extra Halfbrite.

HOLD AND MODIFY (HAM): This powerful screen format lets you display all 4,096 possible colors on the screen simultaneously. The pixel array is the same as in Low Resolution (320 x 200), but Paint makes it possible to use all of the 4,096 colors at the same time instead of only 32.

INTERLACE: The Interlace option doubles the vertical dimension of the pixel array in each of the screen formats. For example, Low Resolution Non-interlaced mode provides a 320x200 pixel array. Low Resolution Interlaced doubles the number of vertical pixels to provide a 320 x 400 pixel array. Interlace pixels are the same width but half as tall as non-interlaced pixels, which means that a Low Resolution Non-Interlaced picture loaded into Low Resolution Interlace mode will look fat. The advantage to Interlace is that it gives you greater vertical resolution without reducing the maximum number of available colors. The disadvantage is that with most monitors, Interlace produces a flickering effect, because it paints the screen in two passes and in each pass paints every other horizontal line. The lines painted in the first pass are already fading before the lines that were skipped can be painted in the second pass. Thus the lines seem to flicker. You can overcome this to some extent by using special "high persistence" monitors, which cause the image to persist longer than the rate of flicker. Turning down the contrast on a standard monitor also reduces the flicker somewhat.

3 THE PALETTE

THE PALETTE SCREEN

The Palette Screen (see Figure 3.1) lets you mix your own custom set of colors from a universe of 4,096.

- To bring up the Palette Screen, press **p** on the keyboard, or select Adjust from the Palette option of the Project menu.

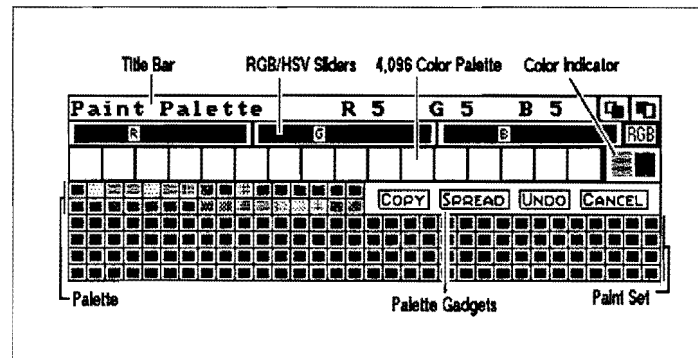


Figure 3.1 Palette Screen

As you can see from Figure 3.1, the Palette Screen is made up of several parts. The following is a quick summary of what each part of the Palette Screen does. In the next few pages, we'll explain how to use these features.

The Title Bar shows the name of the screen, "Paint Palette," and, once you've selected a color, it also displays the RGB values of the currently selected color (the color you clicked most recently).

The RGB or HSV sliders let you modify the currently selected color on any of these color components. Clicking the RGB/HSV button (located to the right of the sliders) toggles the sliders and Title Bar display between RGB (Red, Green, and Blue) color components and HSV (Hue, Saturation, and Value) color components. If these terms are new to you, don't worry. We'll explain them in a moment.

The Color Indicator displays the foreground and background color you most recently selected. As you change the RGB or HSV values of the color you most recently clicked, the new color is also shown in the Color Indicator.

The 4,096 Color Palette displays all of the possible colors in a sixteen square array below the RGB/HSV sliders. You can select a color from this palette simply by clicking on the color you want.

The Palette is a duplicate of the palette in your current picture.

The Palette Gadgets let you copy and spread colors on the Palette Screen, undo the last change you made, or cancel all of your changes.

The Paint Set lets you create large spreads of color and experiment with color mixes before you copy the color into the Palette. In HAM mode you can also select one of the colors in the Paint Set to paint with directly on the painting screen.

CREATING COLORS

When you create new colors to paint with, you will usually want to start by creating your color in the Paint Set and then copy the color into the Palette. Changes you make to the Palette automatically affect the colors in your picture, but changes in the Paint Set have no effect on your picture, so you can experiment with a color all you like. Here's how it works.

- Click a square in the Paint Set to select it.

(When you click a square with the left mouse button, a solid white frame, called the End Range Marker, appears around the square. When you click a square with the right mouse button, a dotted frame, the Begin Range Marker, appears. We'll explain these markers later in the discussion of ranges. But you should also notice that you can use them as a guide to which squares you most recently clicked on, and often what your current foreground and background colors are.)

- Drag the RGB sliders to mix red, green, and blue until you find the color you want. (Or click the RGB/HSV button to change the sliders to HSV and mix a color using Hue, Saturation, and Value.)

In RGB color mixing, you combine red, green, and blue color components to create a new color. The HSV method provides an alternative approach to color mixing, but with identical results. The HSV method breaks each color down into its Hue, Saturation, and Value. Hue simply refers to the color's position on the color spectrum or rainbow — Red, Orange, Yellow, Green, Blue, or Violet, and the various shades in between. Saturation refers to the strength of a particular hue — whether it is relatively pure (and hence highly saturated), or whether it contains some proportion of white. Thus, the more white, the less saturated. Value refers to a color's relative lightness or darkness (sometimes referred to as Luminosity). A color with a high value would have little or no black, whereas colors with low value would contain more black. Irrespective of Hue and Saturation, a Value of zero produces a pure black.

Another way to get a color into your Paint Set is to select it from the 4,096 Color Palette.

- Click a square in the Paint Set with the left mouse button
- Point to the 4,096 Color Palette, hold down the left mouse button and move the pointer around until you find a color that is approximately the color you want. Release the mouse button.

You can perform this same procedure by clicking a square with the right mouse button, and holding down the right mouse button in the 4,096 Color Palette.

Once you have a basic color to work with, you can easily use the sliders to get exactly the right color. Remember, we showed you how to mix the color in the Paint Set because we expect this is the way you will want to do it most often, but you could just as easily mix the color in the Palette portion of the Palette Screen.

COPYING COLORS INTO THE PALETTE

Once you've mixed your color with the RGB/HSV sliders, you might want to copy that color into your Palette. To copy a color:

- Click the color square you want to copy from with the left mouse button.

This makes the color you clicked your current foreground color, as shown in the Color Indicator.

- Click Copy.
- Click the color square you want to copy to with the left mouse button.

This Copies the current foreground color into the square you clicked. If you click Copy and then click a square with the right mouse button, you will copy the current background color into the square.

You can copy colors from any square in the Palette Screen to any other square in the Palette Screen. Since you are able to load and save Palettes and Paint Sets (as we'll explain in a moment) this is a very powerful feature.

COPYING COLORS FROM THE PICTURE

Copying colors from the picture into your palette or Paint Set is the same as copying another color in the Palette Screen, except that you replace the first step with picking the color off the screen.

- Click the Color Indicator in the picture's Palette to get the Pick pointer.
- Click a color in the picture using the left mouse button to pick a foreground color. Notice that both Color Indicators (the one on the picture screen and the one in the Palette Screen) show the new color you clicked.
- Now click Copy and click a box in the Paint Set to copy the color to.

The color you selected is now in your Paint Set. The rule to remember is that Copy always copies the color that appears in the Color Indicator. Your first step is always to get the color you want into the Color Indicator, either by selecting it in the Palette Screen, or selecting it from the Picture.

INDICATING A RANGE OF COLORS

The Palette Screen also lets you indicate a range, which is used in Paint's Gradient Fill function. A range is made up of all the colors between the Begin Range and End Range Marker. To select a range:

- Click the first color in the range with the right mouse button to set the Begin Range Marker, which is a dotted frame around the color box
- Click the last color with the left mouse button to set the End Range Marker, which is a solid frame around the color box.

When you use your range as a fill, the range of colors is always used in order from beginning to end. This means that you can reverse the direction of the gradient by reversing the position of the markers.

Note: your range cannot cross between the Palette and the Paint Set in the Palette Screen. Both the Begin and End colors must be selected from the same portion of the Palette Screen.

CREATING A SPREAD OF COLORS

Spread lets you quickly produce a spread of colors between the current Begin Range and End Range Markers. To do this, you define a range and select spread to create the spread between the two markers.

- Click the first color for your spread with the right mouse button.
- Click the last color for the spread with the left mouse button.
- Then click the Spread gadget to create a spread between the two markers.

You can create the spread either in RGB or HSV mode. The results of the two spreads differs due to the way the spreads are calculated. In RGB mode, the colors are spread based on the numerical values of each of the three color components without regard to the position of colors on the color wheel. In HSV the spread is calculated based primarily on the hue component of the colors, and the spread always moves clockwise around the color wheel. (See Appendix A for a brief discussion of color theory.)

For an example of how the two spreads differ, do the following:

- Set the mode to HSV.
- Click the first color in the Paint Set with the right mouse button. Set the Hue to 0 and the Saturation and Value each to 15.
- Now, click the last color in the Paint Set with the left mouse button. Set it's Hue to 240 and the Saturation and Value to 15. Click Spread.

The resulting spread runs through the orange, yellow, and green hues to reach Blue.

- Change the mode to RGB and click the Spread gadget.

Note that your spread runs from Red to Blue without passing through any of the other colors.

PAINTING WITH PAINT SET COLORS

Painting with colors in your Paint Set is as simple as painting with the Palette colors. Click the color you want and paint with it. (Remember that if the Palette Screen is not active, you have to click once to activate the screen, and a second time to pick the color. The Begin Range or End Range marker will appear around the color box when you click it.)

If you are working in HAM mode, the Paint Set color you clicked is painted onto the picture. If you are working in any other mode, only Palette colors can be used in the picture; **Paint** will choose the Palette color that is closest in shade to the Paint Set color you clicked and paint with that Palette color.

LOADING AND SAVING PALETTES AND PAINT SETS

If you create Palettes or Paint Sets that you especially like, you can save them on disk by using the Save option in the Palette or Paint Set submenus in the Project menu. Later, you can load the Palette or Paint Set to use with a different picture. (You can also load Palettes from other pictures or brushes, because the Palette is saved with pictures and brushes, and **Paint** can extract the Palette information from a picture or brush file.)

Saving and loading Paint Sets is especially useful, because these colors do not automatically affect the picture. You can load a Paint Set and select only the colors you want to use, without inadvertently changing the colors you already have in the picture.

THE THREE PALETTES

When you are working in **Paint**, there are as many as three palettes available to be used with the picture. These three palettes are the picture palette, the brush palette, or **Paint**'s default palette. The Palette submenu in the Project menu lets you choose which palette you want to use at any given time.

When you first start **Paint**, you have only the default palette. Once you load in a picture (or load a palette separately), you have two palettes: the default palette and the picture palette. If you then load in a brush, you have three palettes: default, picture, and brush, and you can switch among them freely.

THE COLOR PALETTE AND SCREEN FORMATS

As we noted above, **Paint** contains a universe of 4,096 colors, from which you can use up to 4,096 at any given time. This is the case with the HAM formats; the other formats (Low Resolution, High Resolution, and Extra Halfbrite) allow fewer colors on the screen at one time. Depending on your memory availability, Low Resolution lets you use up to 32 colors, High Resolution lets you use up to 16 colors in one picture, and Extra Halfbrite lets you use up to 64 colors. See "Screen Resolutions" in this chapter for information on the various screen formats.

4 THE TOOLS

Paint's painting tools are available through the Toolbox, the panel at the top area of the screen. As we have already seen, you can activate any tool by clicking its icon with the left mouse button. A tool remains active (and its icon highlighted) until you select another tool or, in the case of Magnify, deselect it by clicking the icon a second time.

MODIFYING TOOLS

In most cases, clicking a tool icon with the right mouse button lets you modify some fundamental aspect of that tool. The following summarizes the effects of right-button mouse clicks on the tools in the Toolbox:

THE AIRBRUSH: The Airbrush works with any of **Paint's** built-in brushes, or with a custom brush of your own creation.

- You can adjust the Airbrush's nozzle by clicking the Airbrush icon with the right mouse button, moving the cursor over to the painting area, and then pressing the left mouse button and dragging to adjust the size and shape of the solid oval, which represents the spray area. Release the mouse button when the solid circle is the desired size.

DOTTED AND CONTINUOUS FREEHAND, LINE, AND CURVE TOOLS: A right-button click any of these tools restores the built-in brush you used most recently. This is especially useful if you want to switch back and forth between a custom brush and a built-in brush. See Brush Selector later in this section.

FILL AND FILLED SHAPE TOOLS: Clicking the Fill portion of these icons with the right mouse button brings up the Fill Control (see Figure 3.2), allowing you to specify the type of fill to be used by these tools. The following is a summary of the Fill Control's features:

Solid Color fill is the default Fill Type and simply fills with either the foreground or the background color.

Brush Pattern fills shapes with a recurring pattern of your custom brush. (The affect is as though the screen were filled with a recurring pattern of the custom brush, but the pattern is hidden beneath your picture. The fill operation reveals the hidden brush pattern.) The pattern is normally based on the original position of the brush you selected from the screen, but the Fill Offset option lets you set a new position for the pattern.

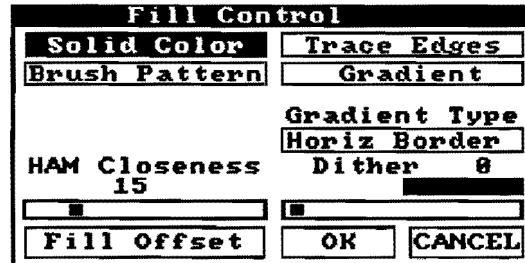


Figure 3.2 Fill Control

Trace Edges, adds a one-pixel outline to every edge of the item being filled. Again, the tracing is done in either the foreground or background color depending on the button pressed.

You can also choose to lay down your custom brush or a range of colors in different ways.

- Click Gradient and then click the box below Gradient Type until the name of the gradient type you want appears. (The gradient types are explained in full in the Reference section, but the best way to understand them is to use them.)

Whichever kind of gradient type you choose, you can adjust its *dither*, the amount of random overlap between each shade, by dragging the dither slider left or right. You can monitor the current dither setting in the box below the slider.

- When you are done selecting a Fill Type, click OK to use the current settings, or Cancel to return to your work without making any change.

BRUSH SELECTOR: Clicking the Brush Selector with the right mouse button restores the last captured brush. Thus, if you had created a custom brush (see Part 1 of this chapter for details) and then made some modifications (for example, rotating the brush), clicking the Brush Selector with the right mouse button would restore the previous (unrotated) custom brush. This feature is also useful if you create a custom brush and then select a built-in brush.

TEXT TOOL: Clicking on the Text Tool with the right mouse button brings up the Load Font Requester for you to load a new font into your font list. To load a font, simply click its name in the requester. If you have more fonts available than can be displayed at one time, use the scroll bar to scroll through the list of available fonts.

When you bring up the Load Font Requester, Paint looks in the directory Sys:Fonts on your start-up disk. Any fonts you wish to use must be in the Fonts directory of the disk you use to start the computer. The fonts provided with DeluxePhotoLab are kept in the Fonts directory of the DeluxePhotoLab program disk. If you have fonts you wish to add, be sure you add them to that directory.

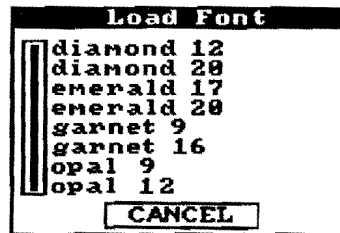


Figure 3.3 Load Font Requester

5 THE PAINT MODES

The options in the Paint Mode submenu of the Modes menu let you make subtle changes to the way paint is laid down on the page. The default Paint Mode is Solid. This mode simply paints with the color as you selected it. *The other modes (except HLF and B&W) use the color values of the brush and the picture to calculate a new color to be placed on the picture.*

For a quick example of one of the painting modes:

- Check that Solid is the selected mode, click the second red in the default Palette with the right mouse button to make it the background color and click CLR to make the page solid red.
- Click a green for the foreground color and draw a filled rectangle of green.

Because Solid is the painting mode, the rectangle is painted in the green you selected.

- Now select Average from the Paint Mode submenu and draw another green rectangle. This time the color values for the red and green colors you are using were averaged, and the rectangle was painted with the new average color.

This example assumes you are following this chapter in HAM display mode as we suggested. If you were using any other mode, the rectangle would be painted with the color in your Palette that most closely matched the average.

The next chapter contains a tutorial which illustrates several of the painting modes, and the modes are also described in detail in the Reference section. See the section covering the Mode menu for more information.

6 TEXT

Paint's text editor lets you place text anywhere on the page, and the Brush Selector lets you pick it up and reposition it if you didn't have it quite right the first time.

- To enter text on the screen, click the Text icon with the left mouse button. You can also choose to enter text in *Italic*, **Bold** or Underline, by making the appropriate choice from the Style submenu of the Fonts menu.
- When you move the pointer over to the painting area, it becomes a small rectangular cursor. Click either mouse button where you want the text to begin, and start typing.

You can press **Return** to start a new line directly below the point where you first placed the cursor. If you type past the edge of the screen, no letters are placed on the picture past the screen edge, but you can **backspace** or press **Return** to move the cursor back to the screen. You can delete text by using the **Backspace** key. Note, however, that if after entering a portion of text you click the cursor elsewhere on the screen, press **Return**, or select a tool from the Toolbox, that text becomes part of the picture, and no longer behaves as text. In other words, you cannot **Backspace** over it as you could when it was still active as text.

Because **HAM** mode places colors on the screen by modifying the previous pixel, typing text on an area of the picture that is composed of **HAM** pixels may cause "fringing." This may make the text completely unreadable if the area is exclusively **HAM** pixels, since **Paint** can't go back and clean up the fringing created by the Text tool. However, if you place text onto the screen as a brush, **Paint** corrects the fringing automatically. *If you need to place text on an area of **HAM** pixels, first type the text on an area of register colors, then cut out the text and paste it onto any area you like. The best method is to type the text in a Low Resolution 3/4 screen and paste it into **HAM**.*

In the next chapter you will learn a number of practical techniques, through a series of tutorials, to help you get the most out of **Paint**. The tutorials are simple, step-by-step exercises, designed with the assistance of professional **Paint** artists. You won't know how powerful **Paint** can be until you try it for yourself. And you don't even have to get your hands dirty.

This chapter takes you through some step by step tutorials on some of the more advanced features of Paint. We encourage you to follow the steps closely, and as soon as you think you understand what is happening, experiment on your own. Our explanations won't be exhaustive, and you will very likely find exciting things to do with the features you see here.

WHAT YOU'LL NEED

To complete these tutorials, you'll need your working copies of the **Deluxe-PhotoLab** program disk and art disk. If you want to save your work, you'll need an initialized disk with a fair amount of available space for saving large files.

- To begin these tutorials, start **Paint** and open a single Hold and Modify Interlaced screen. If you already have the program running, we recommend that you restart so that the tools and option settings are all set to their defaults.

1 THE PAINT MODES

As we explained in the previous chapter, The Elements, the Paint Modes affect the way paint is applied to the picture. These modes affect all drawing tools (though they will not affect a Resize Draw). Usually, you will want to use a Paint Mode to achieve an unusual affect with a custom brush. Sometimes you will simply want to subtly color an area of the picture. The mode you choose will depend on many factors, the most important being the desired outcome, the original colors in the picture, and the colors in the brush.

In this tutorial, we'll take you through some simple Paint Mode effects. Hopefully these will give you some ideas of your own.

- To begin, load the picture Pinball from the art disk. You'll find this picture in the HAMx400 drawer.

This picture offers some good opportunities for changing the colors of a picture. We'll use three colorizing techniques. The first of which is to add a flesh color to the hands.

ADDING COLOR TO THE HANDS

- Select Add from the Paint Modes submenu.

Add takes the color of the brush and adds it to the color of the picture. This means that everything in the area you paint will become slightly lighter. (As you add one color to another, the color approaches white, which has the values R15 G15 B15. Usually you will want to add a dark brush color — one with very low color values — so that you don't wash out the picture.)

- Press **P** on the keyboard to bring up the Palette Screen.
- Click the first color in the Paint Set with the left mouse button.
- Use the sliders to set the RGB color values to R3, G1, B0.
- Press **P** again to hide the Palette Screen.

Now you have a color ready to paint with. Notice that as expected, we chose very low color values.

- Select the Freeform Shape Tool (If you've been using the program, be sure your fill is set to Solid.) Carefully outline each hand so it is filled with the new color.

The pair of hands now has a light flesh tone that preserves the detail of the hands.

COLORING THE TABLE

"And" is also an effective colorizing mode. We'll use this mode to add color to the grid-like table.

Select And from the Paint Modes submenu.

- Press **P** to open the Palette Screen. Click the first color in the Paint Set with the left mouse button and set the RGB values to R0 G15 B0. Press **P** to hide the Palette Screen.

- Select the Filled Polygon tool, and outline the grid-like table. (Since this is only an example, don't worry about being exact as you outline.)

In a moment, the table is colored green, but the detail of the grid lines is preserved. The And mode usually works best with fully saturated colors. Try some different colors to see the results of other combinations. Remember, seeing is the best test when working with Paint Modes. The Repeat command makes it easy to try many combinations. Here's how:

- Click Undo. Bring up the Palette Screen and change your color. Hide the Palette Screen. Press R on the keyboard to repeat your most recent painting operation (which was to fill the table).

When you've found a color you like, just leave it as it is, and move on to the next example.

A GOLD BALL

Sometimes you'll want to use more than one Paint Mode to achieve the effect you want. In this example we'll use three together to change the pinball to a gold color. We'll start by removing all of the color from the ball.

- Select the B&W Paint Mode.

(With Black and White, it doesn't matter what color you select, because the brush is not used to calculate the new colors in the picture. Black and White simply removes the color from the area you paint on.)

- Use either the Freehand Shape tool or the Filled Oval tool to paint over the Pinball.

This simple step changes the pinball to black and white. Now we'll mix in some yellow.

- Press P to bring up the Palette. Set a Paint Set color to R15 G15 B0. This is pure yellow. Hide the Palette.
- Select Mix from the Paint Modes submenu.

- Press R on the keyboard for repeat.

Remember, if you want to paint an area more than once. Just press R to repeat your last painting action. Now we'll turn down the brightness of the ball by subtracting a gray level. In HSV terms, this reduces the Value of the color.

- Bring up the palette. Set a color R1 G1 B1. (This is the lowest level gray.) Hide the Palette.
- Select Sub from the Paint Modes menu.
- Press R to paint over the area again.

This is the last change we'll make to the Pinball picture. Now that you have an idea of how the Paint Modes work, you might want to load some of the other pictures and experiment. For example, you could load PackageCover and achieve an interesting effect by using B&W on the window and the light cast on the floor in the picture.

2 THE SHADE CONTROL

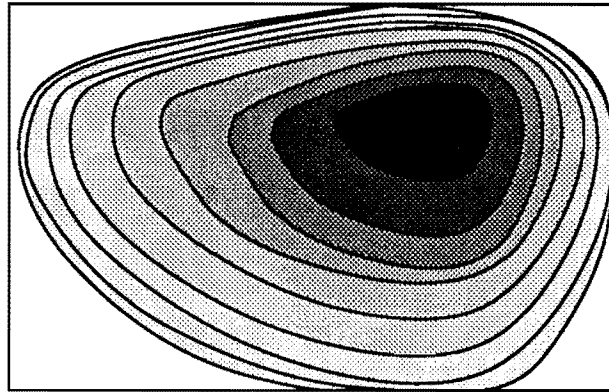
Shade mode is a special case of the Paint Modes. This mode lets you customize the mode so that the paint is applied in gradual shades. As with most of the tutorial matter, this is difficult to understand without seeing it on the screen. We'll start with a few simple examples, and then show you a practical use for this feature.

- Select Use Default Palette from the Palette Submenu. Select black (Color 0) as your background color, and clear the screen to black.
- Select Shade from the Paint Mode submenu.

When you first start the program, the Shade Control has default settings in place, so you'll be seeing the effect of these default settings in this first example.

- Select bright red (Color 2) as your foreground color. Select the Filled Rectangle tool and paint a large rectangle (at least one quarter the screen size) on the left side of the screen.

Paint takes a moment to paint this rectangle on the screen. When it is complete, you see a rectangle with many bands of different red shades in it. The red shades are darkest at the outer edge of the rectangle; they become gradually lighter until they reach the original shade you selected, which appears as an irregular shape in the upper right quarter of the rectangle. Figure 4.1 shows a black and white representation of what you should see on the screen. If you move the pointer up into the Menu Bar, the division between shades becomes very obvious.



**Figure 4.1 Filled Rectangle Using Shade Mode
(black and white representation)**

Now that you've seen what the Shade Control does, let's take a look at how it does it.

- Select Shade Control from the Options menu.

This brings up the Shade Control. (See Figure 4.2 below.) Before you do anything else, take a close look at the gadgets in the Shade Control.

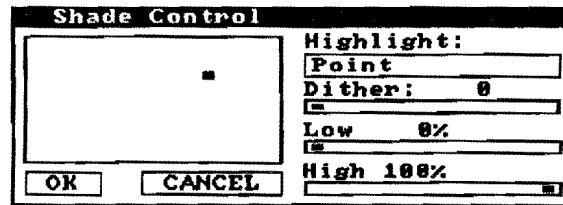


Figure 4.2 The Shade Control

HIGHLIGHT POSITION

Notice that the dot in the upper right corner of the Highlight Position gadget of the Shade Control corresponds to the bright area in the rectangle you painted. You can move this to change the position of the highlight when you paint with Shade. Let's do it now to see how it works.

- Point to the dot in the Highlight Position gadget. Hold down the left mouse button and drag the dot down to the lower left corner of the gadget. Click OK in the Shade Control.
- Paint another large rectangle. (If there is enough room, leave the original rectangle in place; otherwise clear the screen to make room for your new rectangle.)

Once again you have a rectangle painted in several shades of red. But this time the brightest area of the rectangle is in the lower left corner, just as you indicated in the Shade Control.

DITHER

So far you have been working with distinct bands of color. The Shade Control also lets you vary the amount of dither between bands in your shaded area.

- Select Shade Control from the Options menu.
- Drag the Dither scroll box one fourth of the way to the right. (The number above the scroll bar should be about 25.) Click OK.

- Paint another large rectangle.

Dither is the random mixing of colors. You instructed the Shade mode to mix the colors at the edges of your shades. The result is a smoother look to the fill. One area is still brighter than the outer edges, but the separation between shades is not very noticeable. If you'd like to see the dither, select the Magnify tool and magnify the area near where you expect the edge of the brightest shade to be. Be sure to turn off Magnify when you're done.

HOW HIGH AND HOW LOW

- Select Shade Control from the Options menu.

Below the Dither slider in the Shade Control, there are two sliders for setting the amount of paint to be applied at the Highlight and the amount of paint to be applied at the points farthest from the Highlight. The shades are calculated as bands of color between these two extremes.

Take a look at the settings for the High and Low sliders. At the moment, High is set to 100%, which means that at the Highlight, the full value of the color is applied to the picture. The Low slider is set to 0%, which means that at the points farthest from the Highlight, 0% of the color is applied to the picture. The shades are calculated as intermediate values between 100% and 0% of the color.

Let's try an illustration of what the last two paragraphs above are trying to say.

- Drag the Low slider all the way to the right so that the number beside Low is 100%.
- Drag the High slider all the way to the right so that the number is 0%.
- Click OK.
- Paint another large rectangle.

Your rectangle should be brightest in color in the upper right corner and darkest in the lower left. Remember that the Highlight point was placed in the lower left corner. This last rectangle clearly shows that High sets the amount of color used at the Highlight, and that the setting can be for less color than at the outer regions.

MORE HIGHLIGHTS

Throughout this discussion, you've been looking at the Shade Control with the Highlight set to Point. There are three other highlight types you should know about.

- Select Shade Control from the Options menu.
- Click Point to change the setting to Vertical.

Vertical changes the Highlight to a bar across the Highlight Position gadget. The bar runs horizontally, but the setting is Vertical, because the shades will radiate outward from the bar in a Vertical fashion.

- Click Vertical to change the setting to Horizontal.

Now the Highlight is a vertical bar, and the resulting shade would radiate outward from the bar in a Horizontal fashion.

- Click Horizontal to change the setting to All.

All changes the Highlight so that the entire Highlight Position gadget is highlighted. In this setting, the area you paint receives an even amount of the color value, and the amount of color applied is the average of the High and Low slider settings. The result is that you have complete control over what percent of the color is applied to the picture. (Note that because the entire area is highlighted, there are no bands of shading when you paint.)

ATTACK OF THE HUNTERS

Now that you've seen how the Shade Control works, this section quickly runs through a practical example. In this example, you'll combine a picture and a brush from the art disk using the Shade requester.

- From the **DeluxePhotoLab** art disk, load the picture The Hunters. (It is in the HAM x 400 directory.)

- Select Load from the Brush menu and load Godzilla.Brush. (Also in the HAM x 400 directory on the art disk.)

Now you have the picture and the brush you want to combine. The trick is to set the Shade control so that when you stamp down the Godzilla brush, he appears to be in the clouds, just as the Godzilla in the picture seems to be up in the clouds.

- Select Shade Control from the Options menu.
- Set the Highlight to Vertical and place the bar in the middle of the Highlight Position gadget. Set Dither to 0. Set Low to 75%. Set High to 45%. Click OK.
- Position the Godzilla brush along the bottom of the mountain on the left, so that the head is over the clouds. (If you haven't put a handle on your brush, the coordinates are 0072 and 0091; the brush has been cut out to roughly match the contours of the mountain in the correct spot.) Stamp down the brush.

Now the picture contains a second Godzilla coming from around the mountain. The Shade mode let some of the clouds mix with the brush so that the head seems to be in the clouds. You can add more clouds if you like.

This was a simple example of Shade. You can see that the original Godzilla in this picture was also added to the picture using shade. If you would like to see another example, load the picture PhotoGirl; the fading at the bottom of the girl's dress was done using Shade.

3 BRUSH FILLS

This tutorial looks at one of the brush fills available in the Fill Control. Brush Warp is especially interesting because of the bizarre effects it can produce; Dali should have had it so good. After you work through this example, feel free to try some of your own; the Fill Control is one feature that can never be fully explored.

- Before you begin the example, make sure that your Paint Mode is set to Solid.

BRUSH WARP

- Load The Hunters from the **DeluxePhotoLab** art disk.
- Select the hunter (including his gun and the small reptile) as a brush using the rectangle Brush Selector.
- Click the Fill tool with the right mouse button to open the Fill Control.
- Select Gradient as your Fill type and click the Gradient Type gadget until it is set to Brush Warp. Click OK.

Now the Fill type is set to use your custom brush. We'll paint some different shapes using the brush to see how it reacts.

- Select the Filled Oval tool and paint a filled circle about two inches in diameter.

Painting the hunter into a circle with Brush Warp makes it appear as though he is trapped inside a bubble. If you draw a series of bubbles with the largest one near the bottom of the screen and the others shrinking gradually as you move up the screen, it will look as though he is floating away.

This chapter summarizes all of the commands and functions in Paint. Because this chapter is intended for reference only and not as a way to learn the fundamentals of Paint, the descriptions are as concise as possible. If you read an entry in this chapter, but don't fully understand how the feature works, check the Index to see if the feature is explained with examples in one of the earlier chapters.

The information in this reference is grouped into several general categories:

Starting Paint explains the three ways you can start the program from the Workbench and how to select a display mode.

The Painting Screen explains the basic parts of the Painting Screen.

The Palette Screen explains each part of the Palette Screen and how to use it.

The Toolbox briefly explains each of the tools in order reading from left to right across the Painting Screen.

The Menus covers each of the menu items in order working from left to right across the screen and top to bottom down each menu and submenu.

Memory Management gives tips on how to recognize a low memory condition when working with Paint, and suggests ways to free memory.

1 STARTING PAINT

There are three ways that you can start **Paint** from the Workbench.

Method 1: Double-click the **Paint** icon and then choose a display mode.

Method 2: Click a **Picture** icon to select it; then hold **Shift** and double-click the **Paint** icon. This starts **Paint** and loads the selected picture in the proper display mode and page size.

Method 3: Double-click a **Picture** icon.

Method 3 is identical to Method 2 except that Workbench will look for **Paint** on the volume named "PHOTOLAB:". If "PHOTOLAB:" is not a currently assigned volume, you are prompted to insert a disk with that name. If you are running **DeluxePhotoLab** from a hard disk or from a floppy with some other name, you can issue an "ASSIGN PHOTOLAB: <hard disk name>:<directory name>" command from either the CLI (Command Line Interface) or in your STARTUP-SEQUENCE file. (For example, if you are running **Paint** from the **DeluxePhotoLab** directory on your hard disk DH0:, you would add the line:

```
ASSIGN PHOTOLAB: DH0:DeluxePhotoLab
```

to your STARTUP-SEQUENCE file.

2 THE DISPLAY MODE REQUESTER

When you first start **Paint**, you see the Display Mode Requester for selecting the display mode in which you want to create or load your pictures. You can change the settings in this requester simply by clicking on the appropriate area. Once you've selected the display mode you want, click **Open** to open a painting screen with those settings.



Figure 5.1 Display Mode Requester

Note that the Display Mode Requester appears on a separate screen, which is also the screen for the Palette. If you select **New** from the **Project** menu, but do not click **Cancel** or **Open** in the Display Mode Requester, you will not have a Palette Screen for your existing picture.

SCREEN TYPE

The Screen Type gadget is divided into two sections.

Clicking on the top half of the Screen Type gadget cycles you through the possible screen resolutions; the options are Low Resolution, High Resolution, Extra HalfBrite, and Hold and Modify.

Clicking on the bottom half of the Screen Type gadget toggles the selection between Non-Interlaced and Interlaced.

DEPTH

The Depth gadget lets you select how many bit planes the display mode will use. (The number of bit planes determines how many colors a Screen Type can support. Appendix B, "Amiga Display Modes" explains the relationship between the number of bit planes and the number of colors available.) The number of planes you can select depends on the Screen Type you selected. For example, Low Resolution allows any depth setting between 1 and 5. Hold and Modify normally uses 6 bit planes, but will support 5. The depth gadget restricts you to the acceptable settings, so once you've selected the Screen Type, you can choose any number of bit planes that appears in the Depth gadget.

SIZE

Lets you select whether the page size will use the full screen or the top 3/4 of the screen. The 3/4 screen setting is useful for conserving memory, particularly if you want to have two screens open for cutting and pasting.

3 THE PAINTING SCREEN

Once you start **Paint**, select your screen format, and click **Open**, the **Paint** screen appears. Along the top of the screen is the **Title Bar**, **Palette**, and **Toolbox**. When you point to the **Title Bar** and press the right mouse button, the **Menu Bar** appears. The **Menu Bar** and menus are explained in detail later in this chapter.

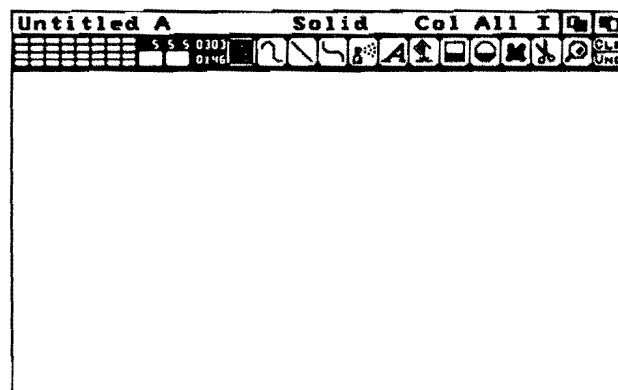


Figure 5.2 The Painting Screen

The area below the **Toolbox** is where you work on your pictures. This area is called the *page*. The normal page size is the same as the screen size. When you're page is larger than the screen, you can scroll the page by pressing the arrow (cursor) keys on the keyboard. When you use the arrow keys, think of them as moving the screen rather than the picture; pressing the down arrow moves the screen down, so it looks like the page is moving up.

THE TITLE BAR

The Title Bar lists the name of your picture (in this case Untitled A). It also lists the current settings in the Modes menu and whether you are using a custom brush (C) or a built-in brush (I).

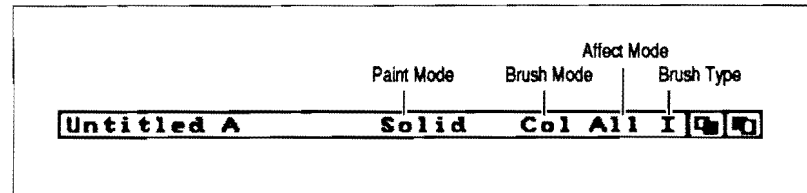


Figure 5.3 The Title Bar

THE PALETTE

The upper left corner of the Painting Screen contains the Palette, where you select the color you want to paint with. Clicking on a color in the Palette with the left mouse button selects that color as the foreground color, which you then paint with using the left mouse button. Clicking on a color with the right mouse button selects the background color, which you then paint with using the right mouse button.

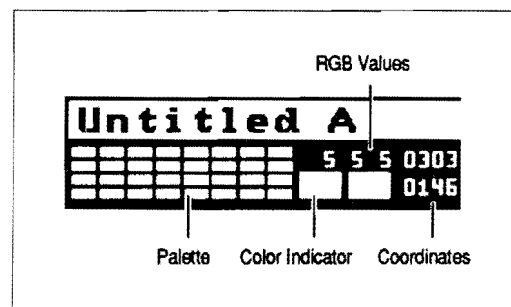


Figure 5.4 The Palette and Indicators

COLOR INDICATOR

The Color Indicator is to the right of the Palette. The left rectangle of the indicator shows the foreground color. The right rectangle shows the current background color. The numbers above the Color Indicator show the Red, Green, and Blue values of the color you clicked most recently.

The Color Indicator also lets you pick colors from the screen. To do this, click the Color Indicator and move the pointer back to the screen. The pointer is labeled "Pick." Point to a color on the screen and click either the left or the right mouse button to select a new foreground or background color. The keyboard equivalent for clicking the Color Indicator is the comma (,) key.

COORDINATES

These numbers show you the current position (the coordinates) of the cross-hair, and thus the position of your brush.

When you are not pressing a mouse button, the Coordinates show the position of the brush relative to the upper left corner of your page. The top number shows you the number of pixels from the left side of the page. The bottom number shows you the number of pixels from the top of the page.

If you press a mouse button, the Coordinates reset to +000 and +000. As you move the brush, the Coordinates shows positive numbers for the number of pixels the brush has moved to the right or down from it's original position. Negative numbers indicate the number of pixels the brush has moved to the left or up from it's original position.

4 THE PALETTE SCREEN

The Palette Screen allows you to change the colors in your Palette. The Palette Screen is actually opened at the same time you start **Paint**, but it is a separate screen behind the Painting Screen. You can display the Palette by using the Back Gadget on each screen until you reach the Palette, by selecting Adjust from the Palette submenu in the Project menu, or by pressing **p** on the keyboard. To activate the Palette Screen as the current screen, click on it. (This is true of all screens in **Paint**: you must click the screen before it becomes active. This is especially important to remember if you are working with multiple pictures.)

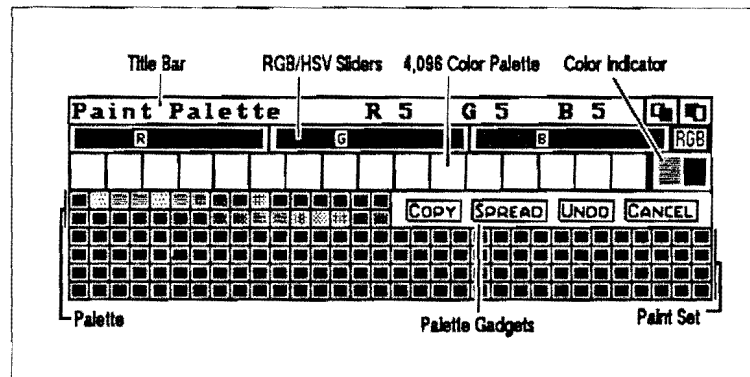


Figure 5.5 The Palette Screen

The Palette is divided into seven sections and gadgets.

The **Title Bar** shows the name of the screen, "Paint Palette," and, once you've selected a color, it also displays the RGB values of the currently selected color (the color you clicked most recently). You can change the display in the Title Bar to show the HSV values for the current color by clicking the RGB button below the Title Bar on the right hand side. The button then changes to HSV.

The **RGB or HSV sliders** below the Title Bar let you modify the currently selected color on any of these color components. To change a component's numeric value, drag the slider to the left or right or click to the left or right side of the slider to move it one step at a time. As you move the slider, the new value

for that color component is shown in the Title Bar. (In HSV mode, you may have to click more than once to change the value.) You can toggle the sliders between RGB and HSV by clicking the button to the right of the sliders.

The **Color Indicator**, located just below the RGB/HSV button, displays the foreground and background color you most recently selected. As you change the RGB or HSV values of the color you most recently clicked on, the new color is also shown in the Color Indicator.

The **4,096 Color Palette** displays all of the colors possible on the Amiga display. Each square of the display is 16 x 16 pixels to show the 16 values of two of the color components. There are sixteen squares to show the 16 values of the third component. In essence, this display is a 16x16x16 color cube that has been sliced into planes as shown in Figure 5.6.

When you first open the palette, the squares are arranged so that, in each square, the Green component increments moving from left to right and the Red component increments from top to bottom. The Blue component increments by one for each of the 16 squares moving from left to right. You can change the direction in which each color increments in this display by pressing the **Help** key on the keyboard.

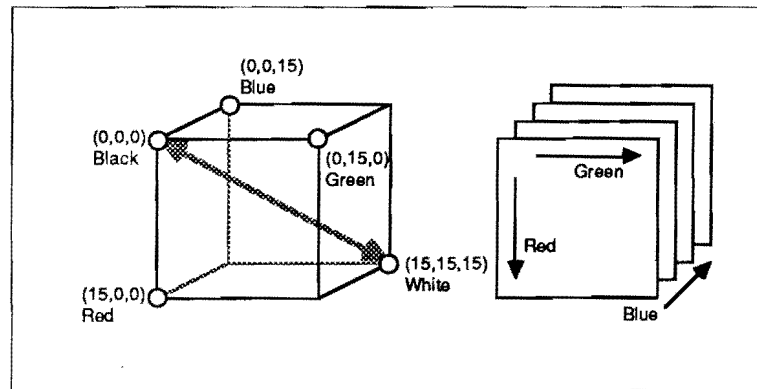


Figure 5.6 The RGB Color Cube

You can select a color from this palette by clicking on the color you want. If you hold down the mouse button and move the pointer, the RGB or HSV values in the Title Bar change continuously to show values for the color under the pointer, and the color itself is shown in the Color Indicator of the Palette Screen. Clicking on the 4,096 Color Palette with the left mouse button changes the currently selected foreground color. Clicking with the right mouse button changes the currently selected background color.

The Palette is below the 4,096-Color Palette and to the left of the Copy, Spread, Undo, and Cancel gadgets. This palette is a duplicate of the palette in your current picture. The number of colors depends on the display mode you are using. Any changes to the Palette in the Palette Screen also change the colors in the current picture's Palette and thus the colors in the picture itself. You can load and save palettes from other pictures using the options in the Palette submenu in the Project menu.

The Palette Gadgets let you copy and spread colors on the Palette Screen, undo the last change you made, or cancel all of your changes.

Copy lets you copy the current foreground or background color to any other color box in the palette, either in the Palette or in the Paint Set. Simply click the Copy gadget, and click the color register you want to copy to. If you click the color register with the left mouse button, you copy the foreground color; if you click with the right mouse button, you copy the background color

Spread lets you quickly produce a spread of colors between the current Range Markers. (Ranges are explained later in this section.) Click the first color for your spread with the right mouse button to place the Begin Range Marker, click the last color for the spread with the left mouse button to place the End Range Marker. Then click the Spread gadget to create a spread between the two colors.

You can create the spread either in RGB or HSV mode. The results of the two spreads will differ due to the way the spreads are calculated. In RGB mode, the colors are spread based on each of the three components without regard to the position of colors on the color wheel. In HSV the spread is calculated based primarily on the hue component of the colors, and the spread always moves clockwise around the color wheel. (See Appendix A, Color Theory for an illustration of the color wheel.)

Undo reverses all changes made to a single color in the Palette Screen until another color is selected. Undo also reverses a Spread or Copy unless you select another color before you select Undo.

Cancel reverses all changes made in the Palette Screen since the Palette Screen became active. This means that you can make many changes in the Palette Screen, but the changes can all be reversed until you make the picture screen active by clicking on it.

The Paint Set is made up of 4 rows of 32 colors each. You can use this area of the palette to create large spreads of color and to experiment with color mixes before you copy the color into the Register Palette. In HAM mode you can also select one of the colors in the Paint Set to paint with directly on the painting screen. In other modes, painting with colors in the Paint Set actually paints with the color in the Register Palette that most closely matches the Paint Set color. You can load and save Paint Sets using the options in the Paint Set submenu of the Project menu.

Ranges: The Spread operation and several of the Gradient Fill options in the Fill Control use a "range" of colors to perform their function. You indicate the colors in the range by marking the beginning and ending points with the Begin Range and End Range Markers.

To create a range: click the first color in the range with the right mouse button to place the Begin Range Marker, a dotted frame around the color box; click the last color in the range with the left mouse button to place the End Range Marker, a solid frame around the color box.

Note: your range cannot cross between the Palette and the Paint Set in the Palette Screen.

5 THE TOOLBOX

Like some of the menu items above, most of the tools in the Toolbox are available through keyboard equivalents. As you become proficient with *DeluxePhotoLab*, you will find it more efficient to use these equivalents, using one hand for the mouse and the other for the keyboard. The following descriptions of the tools include the keyboard equivalents, where appropriate. To help you learn these, we have suggested a mnemonic for most of them.

The painting tools paint with the current foreground color if you use the left mouse button, and they paint with the current background color if you use the right mouse button.

**DOTTED FREEHAND TOOL**

(Keyboard Equivalent: ;)

Paints the current brush shape in a series of "splats." The spacing between the splats depends on how fast you move the mouse and what mode you are in. HAM mode takes much longer to paint when you have a complex brush, so, to produce narrowly spaced "splats" in this mode, you will need to move the mouse much more slowly.

**CONTINUOUS FREEHAND TOOL**

(Keyboard Equivalent: ^)

Paints a continuous freehand line. Depending on the complexity of the brush and the display mode you are using, you may need to move the mouse slowly to produce smooth curves, because the brush may have difficulty keeping up with the mouse.

If you hold down **Shift** while painting with the Continuous Freehand tool, your brush movement is constrained to straight lines running either horizontally or vertically, depending on the direction you move the brush immediately after pressing **Shift**.



STRAIGHT LINE TOOL (Keyboard Equivalent: /)

Paints a straight line.

Click the Straight Line tool with the left mouse button; then position the cursor at the beginning of the line, hold down the appropriate mouse button, drag the mouse to the end of the line, and release the mouse button.

If you hold down **Shift** while painting a straight line, the line is constrained to be either horizontal or vertical, depending on the direction you move immediately after pressing **Shift**.



CURVE TOOL (Keyboard Equivalent: J)

Lets you paint a 4-point curve (an S-curve), or any sort of curve that can be defined by four points.

Click with the left mouse button on the Curve tool to select it. Then, positioning the cursor where you want the curve to begin, hold down the left mouse button, drag the mouse to the place where you want the curve to end, and release the button. The straight line, which is still connected to the cursor, stretches into a curve as you move the cursor away. Drag it until the arc for the end half of the S-curve is the shape you want. Then hold down the mouse button and move the cursor to the other side of the line, to form the beginning half of the S-curve. Release the mouse button to complete it. (Note that you can create a three-point curve by clicking the mouse button to place the middle points of the curve in the same position.)



AIRBRUSH TOOL

(Keyboard Equivalent: ' *accent grave*)

Simulates the action of an air brush.

Click the Airbrush tool with the left mouse button to select it. Position the cross-hair on the page and press either mouse button.

Clicking on the Airbrush tool with the right mouse button lets you size its nozzle. After clicking with the right mouse button to select the tool, move the cursor onto the page and and hold down the left mouse button. Now drag the mouse until the nozzle is the shape and size you want, and release the mouse button to fix it.



TEXT TOOL (Keyboard Equivalent: T)

Lets you type text onto your picture.

Click the Text tool with the left mouse button to select it. Position the text cursor on the page by clicking where you want the text to begin. Select a font from the Font menu and a type style from the Style option of the Font menu. Type your text. Use the **Backspace** key to erase and the **Return** key to begin a new line. Note that you can only backspace to erase on the current line; once you press **Return**, the line of text becomes part of the picture, and can only be erased the same way you'd erase a graphic element.

Clicking on the Text tool with the right mouse button brings up the Load Font requester where you can load a font into your fonts list. See, Load New Font in the Fonts menu for more information on the Load Font requester.



FILL TOOL (Keyboard Equivalent: L)

Fills an enclosed area with the current color or pattern as set in the Fill Control.

Click the Fill tool with the left mouse button to select it. Move the paint can cursor over the enclosed area to be filled, so that the spout is within the shape you want to fill; then click the mouse button to fill it.

Clicking on the Fill tool with the right mouse button brings up the Fill Control. This is the same requester that appears when you select Fill Control from the Options menu. See Fill Control in this reference section for an explanation of the options available in this requester.



UNFILLED/FILLED RECTANGLE TOOL (Keyboard Equivalent: [— unfilled, and Shift-[— filled)

Lets you paint a rectangle shape using any brush. The top half of the tool paints a rectangle outline, while the bottom half paints a filled rectangle using the current settings of the Fill Control.

Click the Rectangle tool with the left mouse button to select it. Position the cursor on the page where you want the rectangle to begin; then hold down the mouse button and drag the diagonally to form a rectangle. When the rectangle is the right size, release the mouse button.

If you hold down **Ctrl** while painting a rectangle, it is constrained to a square. Holding down the **Shift** key constrains the sizing of your rectangle to either horizontal or vertical movement, depending on the direction you move the brush immediately after pressing **Shift**.

Clicking on the bottom half of the Rectangle tool with the right mouse button brings up the Fill Control.



UNFILLED/FILLED OVAL TOOL

(Keyboard Equivalent: **E** — unfilled, and **Shift-E** — filled)

Lets you paint an oval shape using any brush. The top half of the tool paints an oval outline, and the bottom half paints a filled oval using the current settings of the Fill Control.

Click the Oval tool with the left mouse button to select it. Then position the cursor where you want the oval to appear on the page, hold down the mouse button, and drag the mouse diagonally to form an oval. If corner-to-corner is set in the Options menu, then the oval is painted within the two corners defined by the beginning and ending points of your mouse click. If center-out is selected in the Options menu, the oval is painted from the center outward, with the center defined by your initial press of the mouse button. When the oval is the size you want, release the mouse button.

If you hold down **Ctrl** while painting an oval, it is constrained to a circle.

Clicking on the bottom half of the Oval tool with the right mouse button brings up the Fill Control.



FREEFORM SHAPE TOOL

(Keyboard Equivalents: **F** — freeform, and **Shift-F** — polygon)

Lets you paint a freeform shape using the current settings of the Fill Control. Selecting the top half of the tool paints a completely freeform shape; selecting the bottom half paints a freeform polygon.

Click the top half of the Freeform Shape tool to select it as a freeform shape; position the cursor on the page and hold down the mouse button to paint whatever freeform shape you want. When you release the mouse button, the shape is filled using the current fill settings.

If you release the mouse button before the cursor has reached starting point of your freeform shape, the shape is automatically completed with a straight line from the cursor's last position to the starting point.

Click the bottom half of the Freeform Shape tool to select a freeform polygon. Move the cursor onto the page and click the mouse button as many times as you want to define the polygonal shape you want to fill. Each pair of clicks is joined by a straight line. To close the polygon, click the starting point, or click the mouse button twice without moving the mouse.

Clicking on the Freeform Shape tool with the right mouse button brings up the Fill Control.



BRUSH SELECTOR

(Keyboard Equivalent: **B** — rectangular; **Shift-B** — freeform)

Lets you create a custom brush from any image on the page, or recall your most recent custom brush.

To select a rectangular brush area, click the top half of the Brush Selector tool with the left mouse button; once you move it to the page, the cursor changes to a large cross-hair. Hold down the mouse button and drag diagonally to enclose the area you want to use as a brush. Release the mouse button to select it.

To select a freeform brush area, click the bottom half of the Brush Selector tool with the left mouse button; once you move it to the page, a single pixel marker appears in the center of the cursor. Holding down the mouse button, trace a boundary around the area you want to use as a brush and release the mouse button to select it. If you release the mouse button before the cursor reaches the starting point of your freeform shape, the shape is automatically completed with a straight line from the cursor position to the starting point.

Using the left button to select the brush simply copies the selected area onto the brush. Using the right button to select it cuts the selected area from the page to make the brush, and replaces the area with the current background color.

Clicking on the Brush Selector tool with the right mouse button restores your most recent custom brush (if possible).



MAGNIFY (Keyboard Equivalent: **M**)
/ZOOM (Keyboard Equivalent: **I** and **O**)

Lets you magnify an area of the screen and increase or decrease the amount of magnification. Magnify is especially useful for detailed work on small areas of your painting. While the painting is magnified, all other commands are available. To turn off the Magnify tool, click the top half of the tool a second time.

Click the Magnify tool with the left mouse button to select it. When you move the cursor onto the page, it changes to a rectangle, and the lower half of the Magnify tool changes to the Zoom tool. Move the rectangle over the area you want to magnify and click the mouse button. The screen splits into two sections, showing the normal picture on the left and the magnified area on the right.

To increase the magnification, click the Zoom tool with the left mouse button, or press **I** on the keyboard. To decrease the magnification, click the Zoom tool with the right mouse button, or press **O** on the keyboard.

When in magnify mode, pressing **N** on the keyboard centers the area under your cursor within the magnified area. You can also scroll the magnified area using the arrow keys.



CLEAR (Keyboard Equivalent: **K**)

Clears the visible portion of the page to the current background color.



UNDO (Keyboard Equivalent: **U**)

Reverses your last painting operation, provided there have been no intervening mouse clicks.

6 MENU ITEMS

The menus in **Paint** work just like other Amiga menus: point to the Title Bar and press the right mouse button to display the Menu Bar. Then, point to a menu name to open that menu. Finally, drag the arrow down to one of the menu options and release the mouse button to select that option.

Some menu options present submenus to the right side of the option. In these cases, you can drag the highlight down to the option to display the submenu, then drag the highlight to the right and down again to select an option from the submenu.

In many cases, you can select a menu item by using its keyboard equivalent. A table of keyboard equivalents is included as Appendix D at the back of this manual.

The menus, reading from left to right across the Menu Bar, are as follows:

PROJECT MENU

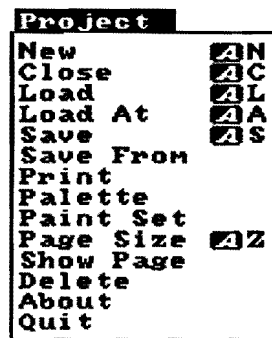


Figure 5.7 The Project Menu

NEW (Keyboard Equivalent: Right Amiga-N)

Lets you set a new display mode and create a Paint screen.

Select New from the Project menu. The Display Mode requester appears, asking you to select a display mode for the new picture. (See "Display Mode Requester" at the beginning of this chapter for an explanation of selecting a display mode.) Select a display mode and click Open. In a moment the screen clears and the Palette and Tools are displayed. You are now ready to begin your new creation or to load a picture.

Note that New creates a new painting screen rather than replacing the previous screen. This means that you can work on more than one picture at a time.

CLOSE (Keyboard Equivalent: Right Amiga-C)

Closes the current picture screen and releases that portion of memory. If the current picture has been modified since it last was saved, a requester appears giving you the option to save the picture before closing.

LOAD (Keyboard Equivalent: Right Amiga-L)

Brings up the Load Requester. See Figure 5.8. The requester contains Load and Cancel buttons, a field to display the current directory path, a file list window (with arrows and a slider for scrolling it), and an edit field displaying the currently selected file.

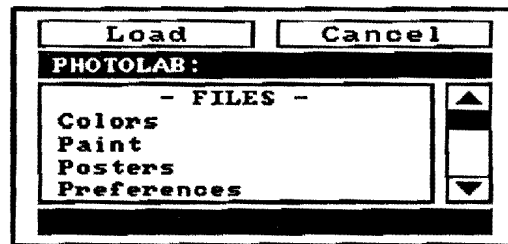


Figure 5.8 Load Requester

To load a picture, click the name of the file you want to open; then click the Load button at the top of the requester.

In addition to files, the window displays Directories, Volumes, and Clipboards. If you click a subdirectory name, the window displays all of the files contained in that subdirectory. Clicking the listing **"/ (parent)"** moves you into the parent directory of the current subdirectory. If you click a Volume name, the contents of that volume are displayed. Also, if you place a different disk in a drive while the Load Requester is displayed, the Volume list is updated to show the new disk. If you inserted the disk in the current drive, the window displays the files from the new disk.

SHORTCUTS

Several shortcuts are available in the Load Requester.

Double-clicking on a file name is the same as clicking the file name and clicking Load.

Clicking on a section title in the display window, such as **"—Files—,"** will skip the window display down to the next section.

You can load a specific file by clicking on the file edit field, backspacing over the previously listed file, typing the name of the file you want (including it's path), and pressing **Return**.

KEYBOARD SHORTCUTS IN THE LOAD REQUESTER

Key	Function
ESC	Cancel
Up Arrow	Move display up one line
Down Arrow	Move display down one line
Shift-Up Arrow	Move display up one section
Shift-Down Arrow	Move display down one section
Return	Same as clicking on Load
D	Shows the directories
F	Shows the files
V	Shows the volumes

- ❖ **TIP:** If you don't know the size of the picture you want to load, use Load At to see the size of the picture. The Width and Height gadgets in the Load At Requester default to the size of the picture you selected. Once you know the size of the picture, you can Cancel the Load At operation, change your page size, and then load the picture.

LOAD AT (Keyboard Equivalent: Right Amiga-A)

Lets you load a picture file at a specific position in a larger picture. You can also specify the size at which you want the picture loaded.

When you select Load At, the Load Requester appears for you to select the picture to be loaded. (See Load in the Picture menu for a description of the Load Requester.)

After you have selected the file you want, and clicked Load, a second requester appears, so you can specify exactly where the picture should be loaded, as well as the size you want it loaded at.

Load At	
X Pos:	0
Y Pos:	0
Width:	320
Height:	400
Load	
Cancel	

Figure 5.9 Load At Requester

The edit fields for X Pos and Y Pos are used to indicate the position of the upper left corner of the area you want to load. The Width and Height edit fields are used to indicate the dimensions of the area you want to load. This means that you can actually resize the image as you load it. Note that the X and Y coordinates are based on the position on the page and easily can be found using the Coordinates display in the Toolbox.

Note that the X Pos and Y Pos numbers can be negative; this allows you to crop the picture along the left or top side as you load it.

SAVE (Keyboard Equivalent: Right Amiga-S)

Brings up a requester for you to save a picture to disk. This requester functions just like the Load Requester (described under Load in the Picture menu), except that clicking Save saves the picture to disk. Be careful that you do not use a file name that already exists on your disk, unless you want to replace that file. You are not warned if you use an existing file name.

When you save a picture, that picture's Palette is saved with it. However, the Paint Set is not saved. If you want to save a Paint Set, you must save it as a separate file using the Save option in the Paint Set submenu of the Project menu.

SAVE FROM

Lets you save a partial picture file from a larger picture.

Selecting Save From brings up the Save File Requester, so you can save your file. Once you have specified the path and file name under which to save the picture, clicking Save brings up a second requester, in which you specify the portion of the picture you want saved.

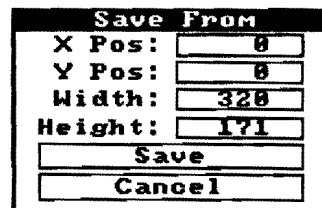


Figure 5.10 Save From Requester

The edit fields for X Pos and Y Pos are used to indicate the position of the upper left corner of the area you want to save. The Width and Height edit fields are used to indicate the dimensions of the area you want to save. Note that the X and Y coordinates are based on the position on the page and easily can be found using the coordinates display in the Toolbox, which also shows the cursor coordinates relative to the upper left corner of the page.

PRINT

Brings up the Picture Print Control, in which you select print settings, and choose to print the current picture.

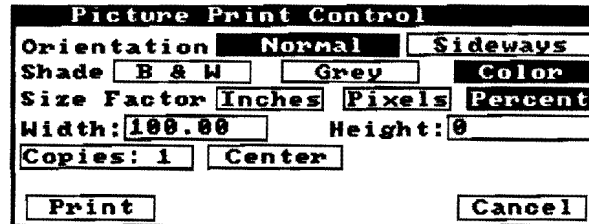


Figure 5.11 Picture Print Control

The options in this requester function as follows:

ORIENTATION: lets you set whether the printed picture is printed so that it is upright when the page is held upright (Normal) or so that the picture is upright when the page is held sideways (Sideways). The default setting is Normal.

SHADE: lets you choose one of three printing shades. The default setting is Color.

B&W prints only the pixels that use color register 0 (zero) in the picture's palette. These pixels are printed in black.

Grey prints the picture as a grey scale image. This lets you print any picture with a black ribbon.

Color prints the picture in full color. Though obviously this option will work correctly only on color printers.

SIZE FACTOR: lets you set whether the size of the printed picture is measured in inches (Inches), printer pixels (Pixels), or as a percent of your page size (Percent). The default setting is Percent.

WIDTH and HEIGHT: let you set the width and height of the printed picture. If you place a 0 in either of these gadgets, only the other setting is used to determine the size of the printout, and the picture is printed proportionally. Otherwise, both numbers are used, and the printout may not be proportional.

Depending on the setting in the Size Factor gadget, the number in these gadgets can represent inches, pixels, or percent of the page size. The default setting is 100 so that the Size Factor and Width combine to print the picture at 100% the width of your page.

COPIES: lets you set the number of copies to be printed. Note that Paint does not send line- or page-feeds to the printer, so each copy of your picture prints directly below the previous copy.

CENTER: sets whether the picture is printed along the left side of the page, or centered between the left and right side of the page. Center always centers between the left and right side of the page, regardless of whether the Orientation setting is Normal or Sideways.

PRINT: Once you have set your print settings, check that your printer is powered on and on-line. Click Print to print the picture. While the picture is printing, a requester appears to tell you which copy is printing. This requester also contains a button to cancel printing. Note, however, that clicking Cancel or pressing the Spacebar to abort a print sometimes leaves garbage printing at the beginning of the following printout. If this happens, you need to reset the printer. If your printer doesn't have a reset option, turn the power to the printer off and then on again.

CANCEL: closes the Picture Print Control without printing the picture. Your most recent print setting are remembered even though you did not use them.

PALETTE

This option presents a submenu containing options for altering the color palette.

ADJUST (Keyboard Equivalent: P)

Brings up the Palette Screen. Or, if the Palette Screen is already displayed, Adjust closes it. See the discussion of the Palette Screen near the beginning of this reference section.

LOAD

Brings up the Load Requester, which lets you load a palette from another picture. (For a full explanation of the gadgets in this requester, see Load in the Picture menu.)

You can load either a palette that was saved separately (using the Palette Save command) or you can load a palette directly from a picture file. When you load a new palette, the colors in the current picture and Palette are replaced with the corresponding colors from the palette you loaded.

SAVE

Brings up the Save Requester, which allows you to save the palette of the current picture. (For a full explanation of the gadgets in this requester, see Load and Save in the Picture menu.)

USE PICTURE

Causes the most recently loaded color palette to be used for the current picture. If no palette has been loaded separately, this option causes the current picture's palette to be used.

USE BRUSH

Causes the palette of the current custom brush to be used for the current picture.

USE DEFAULT

Causes the "Default" palette to be used for the current picture.

PAINT SET

This option presents a submenu containing options for loading or saving Paint Sets.

LOAD

Brings up the Load Requester, which lets you load a Paint Set from disk. (For a full explanation of the gadgets in this requester, see Load in the Picture menu.) Note that you can only load Paint Sets that have been saved as separate files. The Paint Set is not saved when you save a picture.

SAVE

Brings up the Save Requester, which allows you to save the current Paint Set to disk. (For a full explanation of the gadgets in this requester, see Load and Save in the Picture menu.)

PAGE SIZE (Keyboard Equivalent: Right Amiga-Z)

Brings up the New Page Size Requester, which lets you change the width and height of the current picture.

To change the size of your page, select Page Size from the Project menu. In the requester, click in the Width gadget, press **Backspace** or **Delete** to remove the current width setting, type the value for the new width (measured in pixels), and press **Return**. Use the same steps to replace the Height setting. Finally, click New Size to use the new settings, or Cancel to close the requester without using the new settings. The page size will increase or decrease by adding to or subtracting from the bottom and right sides of the page. Note that the upper left corner of the screen is assumed to be the upper left corner of the new page. *If part of your picture is off the screen to the left or above, that part is lost when you change the size.*

SHOW PAGE

This option presents a submenu that contains options displaying the full page if it is larger than the screen. To return to the page after selecting one of these options, click the right mouse button or press a key on the keyboard. When you select the Fast or Smooth options, the area of the page that was displayed before you selected Show Page appears inside an outline. You can move this outline to another area of the page by dragging it with the left mouse button. When you return to the normal display, you will see the new outlined area on the screen.

FAST (Keyboard Equivalent: S)

Shows the page quickly, without smoothing or overscan. The area of the page that was displayed before you selected Show Page appears inside an outline. You can move this outline to another area of the page by dragging it with the left mouse button. When you return to the normal display, you will see the new outlined area on the screen.

SMOOTH (Keyboard Equivalent: Shift-S)

Shows the page with smoothing. The area of the page that was displayed before you selected Show Page appears inside an outline. You can move this outline to another area of the page by dragging it with the left mouse button. When you return to the normal display, you will see the new outlined area on the screen.

OVERSCAN (Keyboard Equivalent: D)

Shows the page as it would appear in overscan display mode. The display is always aligned to the top left corner of the page. You can adjust the position of the overscan image by using the arrow keys on the keyboard. Note that Overscan only works if the page is large enough.

DELETE

Brings up a requester for deleting files from a disk. This requester functions just like the Load Requester described under Load in the Picture menu, except that clicking Delete deletes the selected file.

ABOUT

Brings up a requester that gives the name of the program, date and version number, copyright information and the developers' names.

QUIT

Exits Paint. If you have made changes to a picture since it was last saved, Paint prompts you to save the picture before quitting.

BRUSHES MENU



Figure 5.12 The Brushes Menu

LOAD (Keyboard Equivalent: Right Amiga-G)

Brings up the Load Brush Requester, which lets you load custom brushes from a disk. (For a full explanation of the gadgets in this requester, see Load in the Picture menu.) Note: if a picture can fit in chip memory, you can load it as a brush.

SAVE (Keyboard Equivalent: Right Amiga-P)

Brings up the Save Brush Requester, which lets you save your current custom brush to disk. (For a full explanation of the gadgets in this requester, see Load in the Picture menu.)

SHAPES

Displays a pictorial list of built-in brushes, so you can select one quickly for use.

Select Shapes, then select whichever brush you want from the built-in brushes displayed. When you release the mouse button, your new brush will be the one you selected.

CUSTOM BRUSH

Restores the most recent custom brush. The brush is restored in its modified form rather than in the form that it was selected. For example, if you select a brush and rotate it, then select a built in brush, selecting Custom Brush will restore your custom brush in its rotated form. (You can also restore the original custom brush by clicking the Brush Selector with the right mouse button.)

ROTATIONS

This option presents a submenu containing options for rotating the current custom brush.

VERT FLIP (Keyboard Equivalent: **Y**)
Flips the current brush vertically.

HORZ FLIP (Keyboard Equivalent: **X**)
Flips the current brush horizontally.

ROTATE 90 (Keyboard Equivalent: **Z** clockwise; **Shift-Z** counter-clockwise)
Rotates the current brush 90 degrees clockwise. If you hold down **Shift** while selecting the option, the brush will rotate 90 degrees counter-clockwise. Because pixels on the Amiga display are not square, rotating the brush also distorts it.

ROTATE FREE (Keyboard Equivalent: **W**)
Lets you rotate the current brush to any angle.

Select Rotate Free from the Rotations submenu in the Brushes menu. Your brush changes to a rectangle with a triangle inside. The triangle indicates the top of the brush. The pointer is attached to the center of the rectangle by a line. Rotate the rectangle by pressing the left mouse button and moving the pointer. Because pixels on the Amiga display are not square, rotating the brush also distorts it. As you rotate the rectangle, it stretches and contracts to indicate the distortion to the actual brush. Release the mouse button.

PRINT

Brings up the Brush Print Control, which lets you select print settings and print the current brush.

The options in this requester function as follows:

ORIENTATION: lets you set whether the brush is printed so that it is upright when the page is held upright (Normal) or so that the brush is upright when the page is held sideways (Sideways). The default setting is Normal.

SHADE: lets you choose one of three printing shades. The default setting is Color.

B&W prints only the pixels that use color register 0 (zero) in the brush's palette. These pixels are printed in black.

Grey prints the brush as a grey scale image. This lets you print any brush with a black ribbon.

Color prints the brush in full color. Though obviously this option will work correctly only on color printers.

SIZE FACTOR: lets you set whether the size of the printed brush is measured in inches (Inches), printer pixels (Pixels), or as a percent of your page size (Percent). The default setting is Percent.

WIDTH and **HEIGHT:** let you set the width and height of the printed brush. If you place a 0 in either of these gadgets, only the other setting is used to determine the size of the printout, and the brush is printed proportionally. Otherwise, both numbers are used, and the printout may not be proportional.

Depending on the setting in the Size Factor gadget, the number in these gadgets can represent inches, printer pixels, or percent of the page size. The default setting is 100 so that the Size Factor and Width combine to print the picture at 100% the width of your page.

COPIES: lets you set the number of copies to be printed. Note that Paint does not send line- or page-feeds to the printer, so each copy of your brush prints directly below the previous copy.

CENTER: sets whether the brush is printed along the left side of the page, or centered between the left and right side of the page. Center always centers between the left and right side of the page, regardless of whether the Orientation setting is Normal or Sideways.

PRINT: Once you have set your print settings, check that your printer is powered on and on-line. Click Print to print the brush. While the brush is printing, a requester appears to tell you which copy is printing. This requester also contains a button to cancel printing.

CANCEL: closes the Print Brush Control without printing the brush. Your most recent print settings are remembered even though you did not use them.

RESIZE

Lets you resize your custom brush.

Select Resize. When you move the cursor back onto the page, it is a large cross-hair. Hold down the left mouse button, drag the mouse to form a rectangle that is the size you want your brush to be, and release the mouse button. The brush will be resized to the size of the rectangle you created.

Holding down the **Ctrl** button while dragging the mouse to define the new brush size constrains the resizing to the same aspect ratio as the original brush.

RESIZE DRAW (Keyboard Equivalent: **Right Amiga-D**)

Lets you paint the brush onto the picture in whatever size you select, without resizing the original brush first. Note, however, that Resize Draw does not work with any of the modes in the Modes menu.

Select Resize Draw. When you move the cursor back onto the page, it is a large cross-hair. Place the cross-hair in one corner of the area you want to paint over; then hold down the left mouse button, drag the cross-hair to the opposite corner of the area you want to paint, and release the mouse button. The current brush will be painted in the area you indicated, and it will be the size you defined with the cross-hair cursor. (Click on any tool to remove the cross-hair from the screen.)

Holding down the **Ctrl** button while dragging the mouse to define the size of the painted image constrains the resizing to the same aspect ratio as the original brush.

GRAB LAST (Keyboard Equivalent: **G**)

Grabs the last area painted on the screen and uses it as a brush. This means that you can paint a shape with a built-in brush and then select Grab Last to use that shape as a custom brush. You can also paint with a custom brush and select Grab Last to select an even more complex brush.

HANDLE (Keyboard Equivalent: **Right Amiga-H**)

Lets you offset the cursor from the current custom brush in any direction.

Select Handle, move the cursor/brush onto the page, hold down the left mouse button and drag the mouse in any direction. When the cursor is offset by the desired amount, release the mouse button.

REMAP (Keyboard Equivalent: **Right Amiga-R**)

Remap looks at the colors used in the brush and finds the closest match in the current picture's Palette. This is important if you are using a display mode other than Hold And Modify. Paint automatically remaps brushes in HAM mode when you paint them onto the picture. The Remap option lets you see the brush as it will appear when you paint with it.

MODES MENU



Figure 5.13 The Modes Menu

BRUSH MODE

This option presents a submenu containing brush mode options. These options affect the way a custom brush is used to paint.

MATTE (Keyboard Equivalent: F1)

Uses the brush in its original form. Those areas of the brush that match the current background color are transparent.

This is the default mode when you create a custom brush using the Brush Selector. If you use your brush with Color or Pattern, and then re-select Matte, your brush will be restored to its previous multi-color form.

COLOR (Keyboard Equivalent: F2)

Uses the shape of the custom brush, but paints with the current foreground or background color depending on the mouse button you use. Those areas of the brush that were transparent in the original brush remain transparent.

PATTERN (Keyboard Equivalent: F3)

Uses the current custom brush as a pattern behind the picture.

When you paint on the picture with the Dotted Freehand, Continuous Freehand, Line, Curve, or Airbrush tools, you effectively remove the existing paint to reveal the pattern beneath. The position of the pattern is based on the original position of the area you selected as a brush, unless you offset the pattern using the Fill Offset option in the Fill Control.

If you selected an irregularly shaped brush, painting with the left mouse button reveals only the selected brush area. Painting with the right mouse button reveals the selected brush and the bounding rectangle that defines the brush pattern. In Hold and Modify mode, the bounding rectangle is the same as if you had selected the brush with the standard rectangular Brush Selector. In display modes other than Hold And Modify, the bounding rectangular area is filled with the current background color.

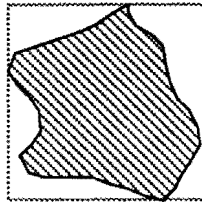


Figure 5.14 Brush and bounding rectangle

STORE (Keyboard Equivalent: F4)

Replaces the bounding rectangle of an irregular shaped brush as though you had selected the brush using the rectangular Brush Selector. In HAM mode, the rectangular area appears exactly as though you selected the brush using the Brush Selector. In other modes, the area around the brush is filled with the current background color.

PAINT MODES

Paint Modes presents a submenu of options that let you specify how the colors of an object (brush, circle, etc.) are combined with the picture colors while painting. These modes are available in every display mode, though display modes other than HAM can only paint with colors in the Palette. The Paint Modes can also be used with any painting tool, and with the Fill Types.

In the descriptions that follow, the RGB values for the calculations are included for those who might better understand the mode by seeing its mathematical implications. Most users will learn the modes more readily by simply trying them under various circumstances.

SOLID (Keyboard Equivalent: Left Alt-F1; Left or Right Alt-F10)

Applies the full value of the object color without regard to the color beneath it on the painting. This is the default painting mode.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	4	9	6
1	2	3	3	2	1	1	2	3

LOW MIX (Keyboard Equivalent: Left Alt-F2)

Applies the lightest amount of object color to the picture color. This is a very useful mode if you are not sure how much of the object color you want to apply. Paint one application of Low Mix and use Repeat to add more color until you reach the desired level.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
1	9	6	7	3	8	6	4	7
1	2	3	3	2	1	2	2	2

MIX (Keyboard Equivalent: Left Alt-F3)

Applies one-fourth of the object color to the picture.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
1	9	6	7	3	8	5	4	7
1	2	3	3	2	1	2	2	2

AVERAGE (Keyboard Equivalent: Left Alt-F4)

Applies one-half of the object color to the picture.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	5	6	7
1	2	3	3	2	1	2	2	2

BLEND (Keyboard Equivalent: Left Alt-F5)

Applies three-fourths of the object color to the picture.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	4	7	6
1	2	3	3	2	1	1	2	2

SHADE (Keyboard Equivalent: Left Alt-F6)

Applies a proportional amount of the object color to the picture. You can set the amount of object color applied by using the Shade option in the Options menu. This mode also lets you apply the object color in a gradual shading effect.

SUB PICT (Keyboard Equivalent: Left Alt-F7)

Applies the color value equal to the object color value minus the picture color value. If the resulting value drops below 0, the minimum, the value 0 is used. (For example, if you have an object color value of 4 and a picture color value of 8, the color value used will be 0, since 4 minus 8 equals -4, which is below the minimum value.)

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	0	6	0
1	2	3	3	2	1	0	0	2

SCALE (Keyboard Equivalent: Left Alt-F8)

Applies the color that results from multiplying the picture color value by the object color value, and then dividing by 15. By doing this, you are scaling the picture color by the object color painted over it. You might think of this option as "embossing" the object into the picture.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	2	2	3
1	2	3	3	2	1	0	0	0

SCALE2 (Keyboard Equivalent: Left Alt-F9)

Applies the color that is the product of multiplying the picture color value by the object color value, and dividing the result by 8. You can reduce contrast in the picture by using a gray brush with a value less than 8, or increase contrast by using a gray brush with a value greater than 8.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	4	3	6
1	2	3	3	2	1	0	1	0

ADD (Keyboard Equivalent: **Right Alt-F1**)

Applies the color that is the sum of the object color value and the picture color value. If the result exceeds 15, the maximum color value, then 15 is used. (For example, if you have an object color value of 6 and a picture color value of 11, the color value used will be 15, since 6 plus 11 equals 17, which is above the maximum color value.)

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	11	12	14
1	2	3	3	2	1	4	4	4

SUB (Keyboard Equivalent: **Right Alt-F2**)

Applies the color that is equal to the picture color value minus the object color value. The general effect is to darken the picture. If the color value drops below 0, the minimum, 0 is used (For example, if you have a picture color value of 4 and an object color value of 8, the color value used will be 0, since 4 minus 8 equals -4, below the minimum color value.)

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	3	0	2
1	2	3	3	2	1	2	0	0

MAX (Keyboard Equivalent: **Right Alt-F3**)

Applies the color that results from combining the highest RGB value components of the object color and the picture color.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	7	9	8
1	2	3	3	2	1	3	2	3

MIN (Keyboard Equivalent: **Right Alt-F4**)

Applies the color that results from combining the lowest RGB value components of the object color and the picture color.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	4	3	6
1	2	3	3	2	1	1	2	1

XOR (Keyboard Equivalent: **Right Alt-F5**)

Applies the color that results from the logical operation "exclusive-or" between the object color value and the picture color value. Applying a gray with a value less than 8 tends to move the colors toward gray. Applying a gray with a value greater than 8 moves secondary and primary colors to their complements. If you apply white to the picture using this mode, the resulting colors are the complements of the original picture colors. In other words, this mode used with a white brush produces a negative image.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	3	10	14
1	2	3	3	2	1	2	0	2

OR (Keyboard Equivalent: **Right Alt-F6**)

Applies the color that results from the logical operation "or" between the object color value and the picture color value. (The result is a little like Max.)

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	7	11	14
1	2	3	3	2	1	3	2	3

AND (Keyboard Equivalent: **Right Alt-F7**)

Applies the color that results from the logical operation "and" between the object color value and the picture color value. (The result is a little like Min, described above.)

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
4	9	6	7	3	8	4	1	0
1	2	3	3	2	1	1	2	1

HLF (Keyboard Equivalent: **Right Alt-F8**)

At those positions where the object color would normally take effect, reduces the picture color by half.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
any	any	any	7	3	8	3	1	4
any	any	any	3	2	1	1	1	0

B&W (Keyboard Equivalent: **Right Alt-F9**)

At those positions where the object color would normally take effect, converts the picture color to its gray level. The effect on the painted area is the same as turning the color knob all the way down on a television set. Note that unless the Palette contains the full range of grays, Paint may not be able to convert the painted area entirely to grays.

Object			Picture			Result		
R	G	B	R	G	B	R	G	B
any	any	any	7	3	8	5	5	5
any	any	any	3	2	1	2	2	2

AFFECT

Presents a submenu that contains options for selecting which pixels in the picture are affected by a painting operation.

ALL (Keyboard Equivalent: F5)

A painting operation effects all pixels in the picture.

FOREGROUND (Keyboard Equivalent: F6)

A painting operation effects only those pixels that are *not* of the background color.

BACKGROUND (Keyboard Equivalent: F7)

A painting operation effects only pixels of the background color.

OPTIONS MENU

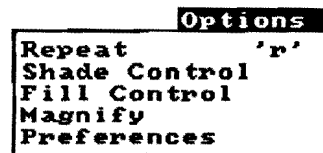


Figure 5.15 The Options Menu

REPEAT (Keyboard Equivalent: R)

Repeats the last painting action using the current Paint Mode, Affect Mode, and either Color or Pattern Brush Mode. If the currently selected tool is a fill tool (Fill, Filled Rectangle, etc.), it also uses the Fill Control settings. If the currently selected tool is not a fill tool, Matte and Store Brush Modes work like Color Brush Mode. Note, however, that when you use Repeat, the color is applied to the pixels that were last painted. So if you last painted with Store mode active, Repeat will act like Color *plus* Store mode.

This lets you paint an area, then change colors or mode settings and repaint the exact same area in a single keystroke. This is useful with Paint Modes such as Low Mix, because it allows you to apply the brush color in gradual increments until you reach the color you want, without your having to manually paint over the area several times.

SHADE CONTROL (Keyboard Equivalent: V)

Brings up the Shade Control, where you select the shade settings to be used when painting in the Shade Paint Mode. How Shade is applied depends somewhat on the painting operation you've chosen. If you paint a filled shape, or fill a shape with a solid color, the Shade effect is applied over the area of the shape. If you paint with a custom brush, the Shade effect is applied over the area of the custom brush. If you paint with a built-in brush, the Shade effect is applied over the area of the screen.

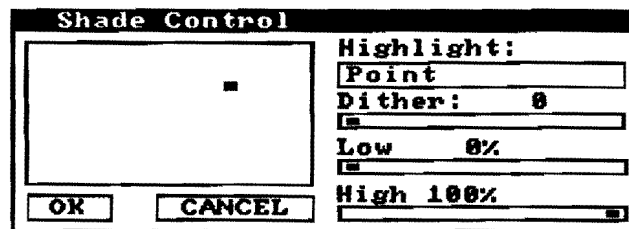


Figure 5.16 Shade Control

HIGHLIGHT POSITION: Positions the highlight (the area of the Shade effect controlled by the High setting) relative to the total affected area. The affected area is represented by the square box (though your actual affected area may be any shape). The type of highlight to be used is set in the Highlight gadget and is represented by a dot, a bar, or the entire highlight position area.

When the highlight type is set to anything other than All, you can position the highlight by dragging it around in the box.

HIGHLIGHT: Determines the type of highlight to be used in the shade operation. Clicking on the Highlight box cycles you through the four possible highlight types: Point, Vertical, Horizontal, and All.

As you click the Highlight box to change the setting, the box to the left shows a graphic representation of the highlight. For example, if you set the highlight to point, the highlight area is shown in the large box as a point. The highlight area of the box is the area that will receive the maximum effect of the brush. The maximum effect is set using the High slider.

If the Highlight is set to All, the object color is applied evenly across the area of the object. The level of color that is applied is the average of the High and Low slider settings.

DITHER: Lets you set the amount of randomness between bands in the shading. Note that the number of bands is determined by the difference between the Low and High settings.

LOW: Lets you set the percent of brush color applied to the painting in the area farthest from the highlight in shaded area.

HIGH: Lets you set the percent of brush color applied to the painting in highlight area.

FILL CONTROL

Brings up the Fill Control, which lets you set the type of fill to be used by fill commands. The four basic types of fill available are Solid Color, Trace Edges, Brush Pattern, and Gradient. The currently selected fill type is highlighted in the window. To select a different one, click its gadget. Each of the fill types is explained in detail below.

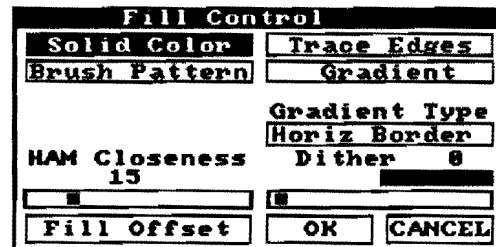


Figure 5.17 Fill Control

SOLID COLOR: Fills the area with the current color. There are no additional gadgets associated with this fill type in the Fill Control.

TRACE EDGES: Traces the edges of the area with a single pixel layer of the current color. This is useful for outlining text.

BRUSH PATTERN: Fills the area with a pattern of the current custom brush. You can realign the position of the pattern by using the Fill Offset gadget.

GRADIENT: Fills all shapes using the currently selected gradient type and color range.

GRADIENT TYPE: Clicking the box below Gradient Type cycles you through the thirteen available gradient types listed below.

Options that use a range of colors take their range from the Palette Screen, where the range is defined as the colors between the Begin Range Marker and End Range Marker. (For information on selecting ranges, see Palette Screen in this chapter.) The thickness of the bands of color used in the fill depends on the number of colors in the range and the area that those colors are spread over. Figure 5.18 shows the four bounding areas used to determine the width of the bands of color used in fills.

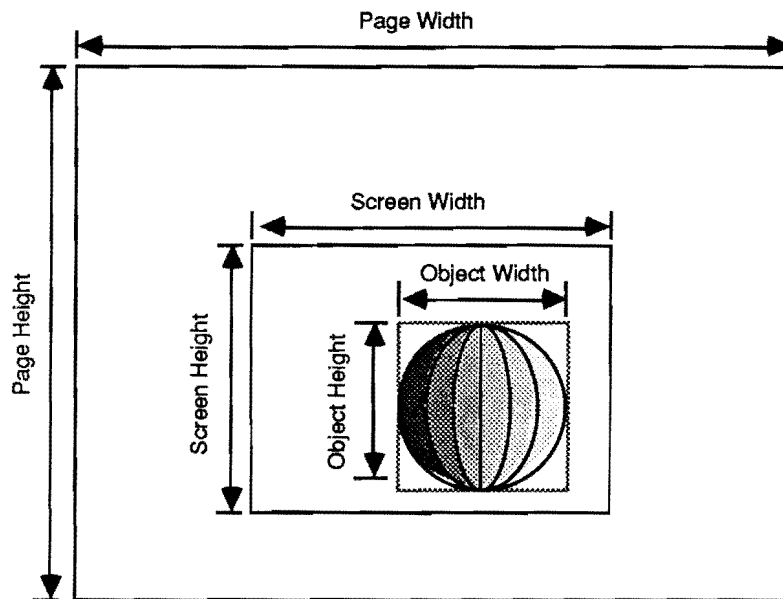


Figure 5.18 Filled Object and Fill Areas

Figure 5.19 shows the result of filling the same circle with the same six color range, based on the seven different fill types that use ranges. Notice that the fills assume that the page is larger than the screen.

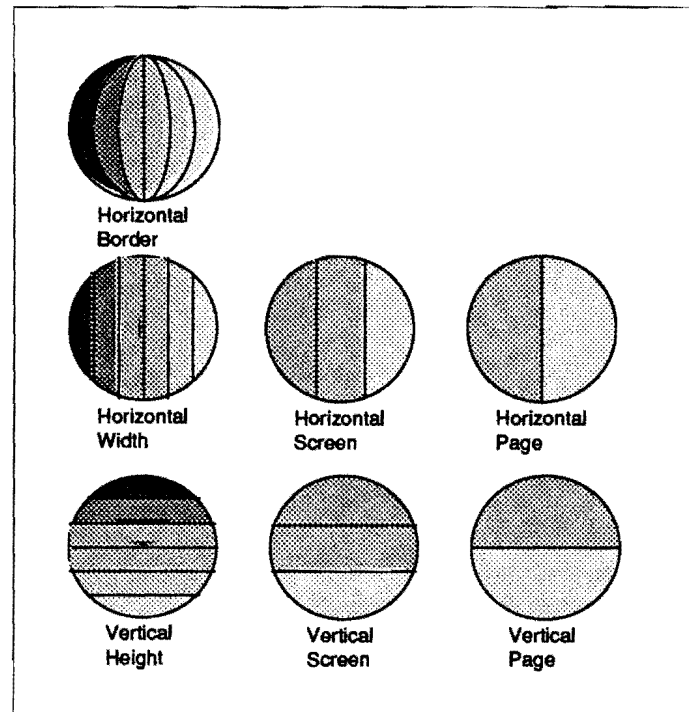


Figure 5.19 The Seven Range Fills

Horizontal Border: Fills the area with the current range of colors within the borders of each individual horizontal line in the areas, so that the gradient follows the contours of the area being filled. This lets you create “pseudo-shaded” objects, if you choose low-contrast colors.

Horizontal Width: Fills the area with the current range of colors, using bands of color wide enough to spread one full set over the rectangle defined by the area’s widest point — the object width. The effect is as though the rectangle defined by the object width were filled with bands of color, and then the filled area was cut from within that rectangle.

Horizontal Screen: Fills the area with the current range of colors, using bands of color wide enough to spread one full set over the screen width. This is a good way to paint a background pattern into an area of the picture that is the width of the screen. Also, it allows you to use multiple fills, with all of them fitting the same pattern of colors.

Horizontal Page: Fills the area with the current range of colors, using bands wide enough to spread one full set over the page width. The filled area will contain only the colors that would be used in that area of the screen if the entire page were filled.

Vertical Height: Fills the area with the current range of colors, using bands of colors fitted to the area's height, as though it were enclosed in a rectangle. This lets you create bounded areas that are smoothly textured, as though lit from above or below.

Vertical Screen: Fills the area with the current range of colors spread uniformly across the height of the screen. This is a good way to paint a background pattern into an area of the picture the same height as the screen. Also, it allows you to use multiple fills, with all of them fitting the same pattern of colors.

Vertical Page: Fills the area with the current range of colors in bands wide enough to spread a full set over the page height. The filled area will contain only the colors that would be used in that area of the screen if it were filled. This lets you create a background pattern that spans the full picture vertically.

In addition to the range fills, there are six fills that use the current brush and either distort it to fill the area, or fill with a pattern made from the brush. As with the range fills, each of the brush fills can also be used with a level of Dither to mix the colors in the filled area.

Brush Border: Fills the area using the current brush pattern, fitting the lines of the brush within each horizontal line segment found in the area. In the resulting fill, the brush pattern may be unusually stretched or shrunk. You can adjust the vertical positioning of the brush pattern by using the Fill Offset option.

Brush Pattern: Fills the area with the current brush pattern. With Dither set to its minimum value (for no dither), this gives you the same fill as the Brush Pattern gadget at the top of the requester. As you increase the amount of Dither, the pixels in the brush pattern move random distances from their normal position.

This lets you create patterned backgrounds that are not entirely regular. It's also a nice way to paint a background with a pattern that's fuzzy, but still recognizable.

Brush Stretch: Stretches the current brush both horizontally and vertically to fit the rectangle defined by the object. Brush Stretch fills the area with the current brush pattern fitted to the area's width and height, as though it were enclosed in a rectangle.

Brush Warp: Fills the area with the current brush pattern, resized to match the brush edges to the edges of the filled area. This fill often results in distortion of the brush. Used creatively, this can produce surrealistic effects.

Horizontal Brush: Stretches the current brush horizontally to match the object width and then fits the brush between the area's vertical borders.

Vert Brush: Stretches the current brush vertically to match the object height and then fits the brush between the area's horizontal borders.

DITHER: lets you set the amount of random overlap between colors. To set the dither, drag the dither slider left or right. When the slider is at the far left, dither is turned off. You can see a representation of the current dither setting in the box below the slider.

HAM CLOSENESS: lets you set how different from each other two shades must be before they are considered separate shades. This slider operates only in Hold And Modify mode, where two colors can be so similar that it is difficult to distinguish them, and yet the differences in their color values might prevent you from filling an area in one fill.

If you fill an area, and many of the pixels do not take the color of your fill, set the slider farther to the right to increase the amount of difference necessary to distinguish between the colors. If you fill an area and the fill bleeds out of the area you want to fill, set the slider farther to the left to decrease the amount of difference necessary to distinguish between the colors.

The values for the slider range from 0 to 80. The default setting when you start Paint is 15.

FILL OFFSET: lets you set a new position for the pattern in Brush Pattern modes.

Brush Pattern modes are normally based on the original position from which your custom brush was selected. To change that position, and thus move the pattern, click Fill Offset. The Fill Control will disappear. Stamp down the custom brush where you want it to appear in the pattern. The brush is not painted, but this position is now remembered as the brushes origin. The Fill Control reappears after you stamp the brush. Click OK in the Fill Control to accept your new setting.

MAGNIFY

Presents a submenu of options that let you select how the pixels in magnify mode are separated from one another. (Note: no vertical break lines appear in HAM mode.)

NORMAL sets no pixel indicator, so the pixels all merge together smoothly. This is the default mode when you start Paint.

LINES sets a single-pixel line between the magnified pixels. (Note that in HAM mode, there are no vertical lines between pixels.)

DOTS sets a dot in the corner between magnified pixels, in addition to separating the pixels with a single-pixel line.

PREFERENCES

Presents a submenu of options that can be toggled on or off. When an option is toggled on, a check mark appears beside it.

WORKBENCH

Lets you choose whether to display the workbench. When Workbench is selected, the Workbench is opened; this is the default setting when you first start the program. Closing the Workbench frees up additional memory for use by Paint.

TRANSPARENCY (Keyboard Equivalent: **Q** — on; **Shift-Q** — off)

Lets you choose whether the background color is treated as transparent when a custom brush is selected. On treats the current background color as transparent. Note that pressing lowercase **q** on the keyboard turns Transparency on. Pressing uppercase **Q** on the keyboard turns Transparency off.

SMOOTH (Keyboard Equivalent: \)

Lets you choose the degree to which the edges of a shape are smoothed (using the anti-aliasing algorithm) when it is sized. This option affects resizing functions such as Resize, Resize Draw, and Load At. If Smooth is checked in the menu, Paint applies a higher degree of smoothing than when the option is not checked. However, some degree of smoothing is always applied.

CENTER OVALS (Keyboard Equivalents: C — on; Shift-C — off.)

Lets you choose how to paint ovals. On lets you paint them from the center outward as you drag the mouse; off paints them in the area defined by the cross-hair as you drag the mouse from corner to corner.

NO BACKGROUND

Lets you choose whether the Paint Modes can select Color 0, the background color, when painting. On prevents a painting mode from selecting Color 0; off allows a painting mode to select it. (This mode is especially useful when using GenLocks.)

FONTS MENU

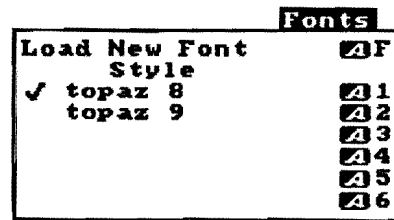


Figure 5.20 The Fonts Menu

LOAD NEW FONT (Keyboard Equivalent: Right Amiga-F)

Brings up the Load Font Requester, which lets you select a font to be added to the font list.

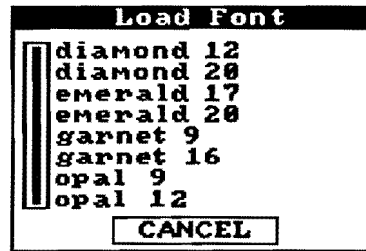


Figure 5.21 The Load Font Requester

Select Load New Font and click in the font requester on the name of the font you want. If its name is not visible, use the scroll gadget on the left to scroll through the listings. New fonts are added at the top of the list. You can have only six fonts in the Fonts menu at a time. If you have six fonts already and you load in a new one, it is added to the top of the list, with the font at the bottom removed automatically.

- ◆ **TIP:** A handy way to use custom fonts from a font directory other than the system's: Open a new screen in Paint; Use the CLI (sorry) to reassign your fonts path (for example, ASSIGN Fonts: df1:fonts); then use the fonts menu of the new screen to select your custom font.

STYLE

Presents a submenu of text styles. With the exception of Plain, selecting a style from the submenu turns it on, with a check mark appearing beside its name on the list. You can apply any combination of styles to your text. Selecting Plain turns all of them off.

PLAIN (Keyboard Equivalent: Ctrl-P)

UNDERLINE (Keyboard Equivalent: Ctrl-U)

ITALIC (Keyboard Equivalent: Ctrl-I)

BOLD (Keyboard Equivalent: Ctrl-B)

Note: Using the Italic style with a font larger than 50 points will greatly distort the font.

[FONT NAMES]

(Keyboard Equivalent: **Right Amiga-1** through **6**)

The lower portion of the Fonts menu lists the last six fonts used in **Paint**. You can select a font by choosing it from the menu, or by typing its keyboard equivalent.

7 MEMORY MANAGEMENT

To give you the flexibility of large page sizes, custom brushes, Affect Modes, and Paint Modes, **Paint** uses a large amount of memory. As a result, you may occasionally encounter memory shortage while performing a memory-intensive operation.

Memory shortage can manifest itself in various ways. For example, if you are at the limits of available memory, and you select a large brush, **Paint** conserves memory by displaying just the outline of the brush rather than the brush itself. When you paint with the brush, the image will appear on the screen as usual, even though it may not be visible as you move it around the screen. When this happens, you should take some action to free some memory. Other symptoms of low memory are: the menus or submenus don't open; you can't select a custom brush; you can't rotate a brush; you can't open a new screen.

Some ways to free memory are: Close the Workbench; select a smaller custom brush; or close some open screens. When all else fails, restart the computer so that memory isn't fragmented.

If you ever select a custom brush and then can't display the Brushes menu to save the brush, use the keyboard equivalent **Right Amiga-P**.

POSTERS



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NOTES

*This chapter takes you through a quick tour of **Posters**. In the process, you'll learn about almost every feature of the program, and you'll finish by printing a poster.*

THE POSTERS SCREEN

When you first start **Posters**, the **Posters** Screen appears. The screen is made up of a Title/Menu Bar, the Page Grid, Poster Size gadgets, and Page Size gadgets as shown in Figure 6.1 below.

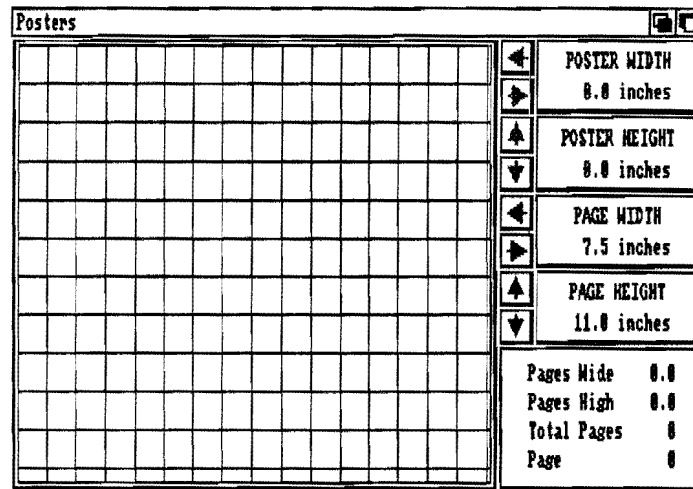


Figure 6.1 The Posters Screen

SETTING YOUR PAGE SIZE

Each rectangle in the Page Grid represents one page. When you first start **Posters**, the program uses your current Preferences setting. (If you are not familiar with Preferences, see your Amiga User's Guide.)

- To change the page size to match the size of the paper you are using, click the arrows of the Page Width and Page Height gadgets.

As you change the size of the pages, you'll see that the rectangles in the Page Grid adjust to reflect the new page size and the number settings show the new size in inches. Clicking the Page Width arrow that points left makes the pages in the grid narrower. Clicking the arrow that points right makes the pages wider. The arrows beside Page Height work the same way: the top arrow (pointing up) makes the pages shorter, and the bottom arrow (pointing down) makes the pages longer.

- Use the Page Width and Page Height arrows to set the page size to match the size of your paper. (You won't have to do this step if your Amiga Preferences were already set to the correct paper size.)

This is the first step you'll want to do every time you use **Posters**.

LOADING A PICTURE

- To load a picture, select Load from the Project menu. (To do this, hold down the right mouse button to display the menus, point to the Project menu, pull the highlight down to Load, and release the mouse button.)

The Load Requester appears for you to select a file to load. The requester works exactly like the requester described in the Getting Started section of this manual.

- Press V to display the volumes. Click the volume PhotoLab Art to display the contents of the art disk. Click the directory HAMx400 to display the contents of that directory. Click the file ComicPoster and click Open to load that picture.

The picture appears as a gray rectangle in the upper half of the first page in the Page Grid.

SIZING YOUR POSTER

When you first load a picture, it is sized to fit the current Page Width. Poster Width and Page Width are now the same. There are two ways to change the size of your poster. One way is to drag the lower right corner of the gray picture rectangle with the pointer. The other is to click the arrows beside Poster Width and Poster Height. You will usually want to use both of these methods.

DRAGGING THE POSTER

- Place the pointer anywhere on the Page Grid and press down the left mouse button.

The poster size adjusts so that either the right or bottom side of the poster aligns with the position of the pointer. (The other edge of the poster may not meet the pointer, because at the moment **Posters** is set to maintain the aspect ratio of the picture.)

- With the mouse button held down, drag the pointer around in the Page Grid to see how the poster size responds.

CLICKING THE ARROWS

- To fine tune the size of your poster, click the Poster Width or Poster Height arrow gadgets.

Notice how clicking the arrows changes the poster size. The numbers for Poster Width and Poster Height also change one tenth of an inch for each click. This allows you to carefully size your poster to make the best use of your page size. If you point to one of the arrows and hold down the mouse button, the poster size changes continually until you release the mouse button.

ASPECT RATIO

As you changed the poster size above, the picture's aspect ratio was always maintained. If you like, you can size the poster to any dimensions by turning off the Aspect Ratio option in the Mode menu.

- Select Aspect Ratio from the Mode menu to remove the check mark beside the option.

Now you can set the width and height of the poster independently, so the poster can be any size. (Though selecting a size that is not a multiple of the normal picture size will result in a distorted printout.) Try sizing the poster now, and you will see that the lower right corner of your poster always meets the pointer as you drag.

When you turn Aspect Ratio back on, the poster height automatically adjusts to the proper size to preserve the aspect ratio.

- Select Aspect Ratio from the Mode menu now and watch the Poster Height adjust.

PREVIEW

The Preview option in the Mode menu replaces the standard gray poster rectangle with a representation of the picture you are working with.

- Make the picture fairly large and then select Preview from the Mode menu to see how this works.

This function is useful if you want to see how the printed pages will be combined, or if you want to print an area that is smaller than the total picture. Note that **Posters** displays the picture representation only until you select another function.

HORIZONTAL PRINTING

Posters lets you choose how the picture is oriented on the pages in the printed poster. At the moment, the Horizontal Printing option in the Mode menu is selected, so the poster prints horizontally across upright pages. You can see this is true if you select Preview to see the picture in relationship to the pages.

- Select Horizontal Printing from the Mode menu to turn the option off.

The Page Grid turns sideways in relation to the picture. Now you can see that if you held one of the 8 1/2 by 11 inch pages upright, the picture would be printed vertically in relation to the page.

Whether it is advantageous to have Horizontal Printing on or off depends on the original size of your picture and the finished size you want your poster to be. For example, if you want to create the largest poster of ComicPoster that you can fit on a single 8.5 x 11.0 inch page without changing the aspect ratio, you want Horizontal Printing off. If you want to create the largest poster of ComicPoster that you can fit on eight pages, you would want Horizontal Printing on.

Remember that the best combination of printing orientation and poster size depend on the size of your original picture, so you should always try different settings for Horizontal printing to see which is best.

WHICH PAGE IS NEXT?

As you look at the Page Grid, it might not be apparent to you what order the pages print in. **Posters** provides a simple way to see the page ordering scheme:

- Place the pointer over a page of the poster and look in the bottom left corner of the screen; the number beside Page is the number of the page you are pointing to.
- Now move the pointer around to see how the page numbers change. The upper left corner of the poster is always page one, and page two is either to the right or down.

If you ever want to print an area of your picture that is smaller than the total poster, you can identify the pages for that area by selecting Preview and using the pointer to find the page numbers. In a moment, you'll see that the Print Requester lets you specify exactly which pages you want to print. So you can print a small section, or start over in the middle if you run out of paper or ribbon while you are printing.

THE PRINT REQUESTER

Right now, let's set up the poster size and print a small poster. The instructions that follow assume that you are using paper that is 8.5 x 11 inches and in continuous form rather than single sheets.

- Open the Mode menu to confirm that Aspect Ratio and Horizontal Printing are both checked as on.
- Check that your Page Width is 8.5 and Page Height is 11.0.
- Drag the poster to be approximately two pages wide. Then use the Poster Width and Height arrows to set the poster size to exactly 17.0 inches wide and 10.6 inches high. Look in the lower right corner of the screen to confirm that the poster takes two pages to print.
- Now select Print from the Project menu.

The Print Requester will appear and look something like this:

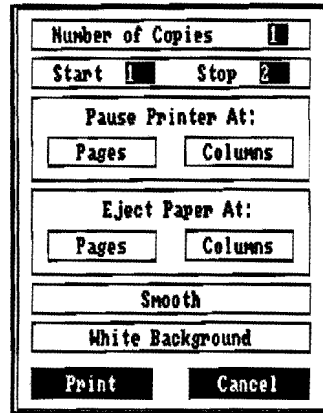


Figure 6.2 Posters Print Requester

The function of most of the gadgets in this requester are probably clear to you without explanation, but just in case, we'll quickly run through each of them. Don't change any settings yet, we'll tell you which options to change after we run through the explanations.

Number of Copies: simply lets you set the number of copies you want to print of your poster. To change the number of copies, click the number, press Del or Backspace to remove the old number, then type the new number and press Return. When you select more than one copy, **Posters** prints the poster the number of times you requested.

Start and Stop: let you specify which page in the poster should be the first page printed and which should be the last. As we mentioned above, this is useful if you want to print a poster-size image that is only a small part of a picture, or if you run out of paper or ribbon in the middle of printing a poster, you can start over from where you left off.

Pause Printer At: lets you pause the printer after each page or each column. The default setting is for the printer to print continuously without pausing. If you are using single sheets, you'll want to pause after each page, or if your printer doesn't hold the alignment very well, you might want to pause after each column to adjust the alignment. To select one of these options, simply click that button. If you want to turn off a selection, click the button again.

Eject Paper At: lets you set the paper to eject after each page or each column. The default is for the printer to print without intervening paper ejections. If you want each strip of your poster to line up identically, you probably want to eject after each column to reset the top of form.

Smooth: reduces the "jaggedness" of the image as the poster is printed using a function known as anti-aliasing. This is similar to the smooth function in Paint. Note that smooth requires additional memory to perform the smoothing calculations. Depending on the amount of memory in your computer, you may not be able to use smooth if you are trying to print a large poster.

White Background: When this option is set, any area of your picture that uses Color0 will not be printed. Thus, if your background color is Color0 and you are printing on white paper, the result is a white background. This is a great ribbon and ink saver and also speeds up the printing.

Now let's actually print the poster.

- Make sure that your printer is properly connected to the computer and is turned on.
- If you are using continuous paper, don't change any of the settings in the Print Requester. Just click Print.
- If you are using single sheets of paper, click Pages in the Pause Printer At: option and then click Print.

A requester appears to tell you which column is being printed. This requester also contains a Stop button for you to cancel printing if you wish. How long it takes to print a poster will depend mainly on how fast your printer can print. In any case, we think you'll find the results are worth the wait.

This chapter walked you through almost every function of Posters. If you have specific questions about how a particular feature works, you may find more information in the Posters Reference section. The Posters Reference will come in handy later, when you just want to look something up quickly.

This chapter summarizes the commands and functions in Posters. Because this chapter is intended for reference only and not as a way to learn the program, the descriptions are as concise as possible. If you read an entry in this chapter and don't fully understand how the feature works, look through the Posters Guided Tour to see if there is a step-by-step example.

1 THE POSTERS SCREEN

When you start **Posters**, the first thing you will see is the **Posters** Screen. See Figure 7.1. This screen consists of a Title Bar/Menu Bar, a Page Grid, gadgets for setting your Poster Size and Page Size, and a display to show you the current size of your poster.

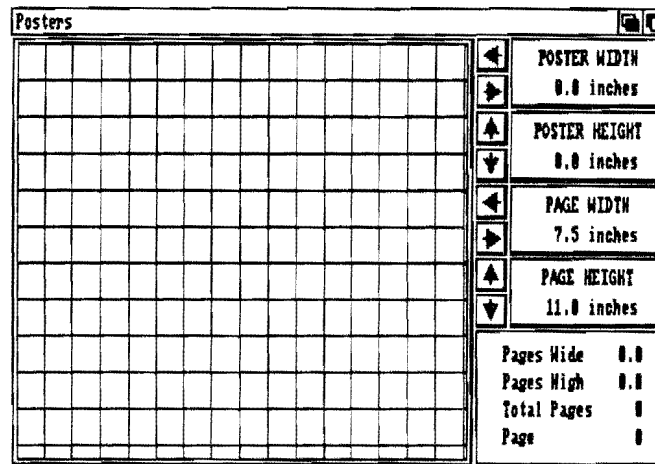


Figure 7.1 The Posters Screen

TITLE BAR

The Title Bar at the top of the **Posters** Screen shows the name of the program and the name of the last file you loaded, if any. The Front Gadget and Back Gadget on the right side of the title bar work as they do on normal Amiga screens.

MENU BAR

When you press the right mouse button, the Menu Bar displays the menu names. Then pointing to the menu name opens that menu.

THE PAGE GRID

The large checkerboard area of the screen is the Page Grid. Each rectangle in the grid represents one page. The size of each page (and thus each rectangle) is set using the Page Size gadgets. The page size is initially set to the same size indicated in Preferences.

When you load a picture to be printed, it is represented on the grid as a solid rectangle on the first page (in the upper left corner of the Page Grid). When the picture is first loaded, the poster width is sized to fit the current page width and the poster height is sized to maintain the picture's aspect ratio.

You can size the poster by placing the pointer on the Page Grid and holding down the mouse button. The solid rectangle representing the poster enlarges or shrinks so that the lower right corner aligns with the pointer. (If you have Aspect Ratio in the Mode menu selected on, either the right or bottom edge of the poster aligns with the pointer position, but the poster sizes to maintain the picture's aspect ratio.) When you release the mouse button, the poster stays the size you selected with the pointer. Notice that the numbers in the Poster Width and Poster Height gadgets show the new poster size.

You can also size the poster by using the Poster Width and Poster Height gadgets.

POSTER SIZE GADGETS

Clicking on the arrows beside Poster Width and Poster Height changes the size of the poster by one tenth of an inch for each click. If you point to an arrow and hold down the mouse button, the poster size increases continuously until the maximum size is reached. Notice that the numbers in the gadgets show the new poster size as it changes.

PAGE SIZE GADGETS

The Page Size gadgets allow you to change the size of the paper you use, without changing the settings in Preferences. Clicking on the arrows beside Page Width and Page Height changes the size of the pages by one tenth of an inch for each click. If you point to an arrow and hold down the mouse button, the page size increases continuously until the maximum size is reached. (The maximum width or height is 120 inches.) The rectangles in the Page Grid immediately adjust to represent the new page size. The numbers in the Page Width and Page Height gadgets display the new size in inches.

2 MENU ITEMS

Posters's menu items remain hidden until you move the cursor to the top of the screen and press the right mouse button. As you move the cursor horizontally across the Menu Bar, one after another of the menus drops down to reveal its selection of options. Moving the cursor down the selection of options highlights each one. Releasing the mouse button when a menu option is highlighted selects that option.

In many cases, you can select a menu item by using its keyboard equivalent. Keyboard equivalents, where available, are shown next to the corresponding item in the menus and in the descriptions that follow. You can find a table of keyboard equivalents at the end of this reference section.

The menus, reading from left to right across the Menu Bar, are as follows:

PROJECT MENU

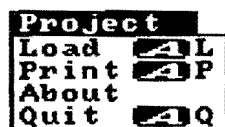


Figure 7.2 Project Menu

LOAD... (Keyboard Equivalent: **Right Amiga-L**)

Brings up the Load File requester. See Figure 7.3. The requester contains Open and Cancel buttons, a field to display the current directory path, a file list window with arrows and a slider for scrolling the window, and an edit field that displays the currently selected file.

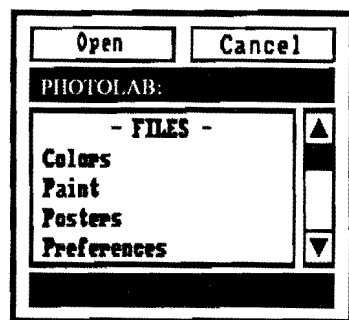


Figure 7.3 Load File Requester

To load a picture, click the name of the file you want to open and then click the Open button at the top of the requester.

In addition to files, the window displays Directories, Volumes, and Clipboards. If you click a subdirectory name, the window displays all of the files contained in that subdirectory. Clicking the listing / (parent) moves you into the parent directory of the current subdirectory. If you click a Volume name, the contents of that volume are displayed. Also, if you place a different disk in a drive while

the Load File requester is displayed, the Volume list is updated to show the new disk. If that drive was the current drive, the window displays the files in the new disk.

Shortcuts

Several shortcuts are available in the Load File Requester.

Double clicking on a file name is the same as clicking the file name and clicking Open.

Clicking on a section title in the display window such as "—Files—" will skip the window display down to the next section.

Keyboard shortcuts

Key	Function
ESC	Cancel
Up Arrow	Move display up one line
Down Arrow	Move display down one line
Shift Up Arrow	Move display up one section
Shift Down Arrow	Move display down one section
Return	Same as clicking on Open
D	Shows the directories
F	Shows the files
V	Shows the volumes

PRINT (Keyboard Equivalent: **Right Amiga-P**)

Brings up the Print requester, which contains various printing options and lets you print your poster. (Note that you cannot select Print until you have opened a picture file.) The options in this requester are as follows:

NUMBER OF COPIES

Lets you set the number of copies you want to print of a single poster. To change the setting, click in the gadget, backspace to erase the current setting and type a new number.

START and STOP

These gadgets let you set the range of pages to be printed. When you first select the Print option these gadgets are set to print the whole poster (Start is set to 1, and Stop is set to the last page number). If you want to print a section smaller than the total poster, you can change the settings to print any range. To change each setting, click in the number box, use Backspace or Delete to remove the existing number, type the new number of copies, and press Enter.

PAUSE PRINTER AT:

This feature lets you pause the printing at either page or column boundaries. With continuous feed paper, this feature lets you adjust the paper occasionally to ensure that the alignment is correct. If you are printing on single sheets of paper, select Page. This interrupts printing after each page so you can insert the next sheet of paper.

EJECT PAPER AT:

This feature lets you eject the paper at the end of each page or column. Ejecting the paper ensures that the next page or column will begin at the top of a sheet of paper.

SMOOTH

When Smooth is not selected, the individual pixels of enlarged pictures print as small rectangular areas. With Smooth selected the contents of adjacent pixels are considered during the printing process and the edges between pixels are "smoothed" (in a process known as anti-aliasing). This smoothing increases the apparent resolution of the picture. (Note that the effectiveness of this feature will vary from printer to printer. Also, the extra calculations required for the smoothing effect will noticeably slow the printing process.)

WHITE BACKGROUND

When White Background is selected, areas of the picture that use color register 0 (zero) are not printed. For example, if you had a picture of a bird on a solid blue background, only the bird would be printed if the blue background color was in color register 0.

CANCEL

Closes the Print requester without printing the poster.

PRINT

Prints the poster. Once printing has started, a requester box appears to tell you what range of pages is printing. This requester contains a Stop button so you can abort printing at any time.

Note: Do not change the Amiga printer preferences while you are printing. Any changes could adversely affect the poster.

ABOUT

Brings up a requester that gives the name of the program, copyright information and the developers' names.

QUIT (Keyboard Equivalent: Right Amiga-Q)

Exits Posters.

MODE MENU


Figure 7.4 Mode Menu

PREVIEW (Keyboard Equivalent: Right Amiga-V)

Changes the rectangle in the Page Grid from a solid color into a representation of the picture you are working with. This lets you see the relationship between the individual strips of paper and the completed poster.

ASPECT RATIO (Keyboard Equivalent: Right Amiga-A)

When this option is selected, the poster can only be enlarged or reduced to a width and height combination that maintains the picture's original aspect ratio. This means that when you try to resize the poster by dragging the pointer on the Page Grid, the right edge of the poster moves to align with the pointer, but the height adjusts to a setting that maintains the picture's aspect ratio. If you use the arrows beside Poster Width or Poster Height to change the size of the poster, any arrow will change *both* the width and height.

When this option is not selected, you can change the poster's width and height independently, and **Posters** will not attempt to maintain the aspect ratio.

HORIZONTAL PRINTING

(Keyboard Equivalent: Right Amiga-H)

When Horizontal Printing is selected, the poster is printed horizontally in relation to the paper. In other words, if you are printing on 8 1/2 by 11 inch paper and you have Horizontal Printing selected, the finished poster is assembled from sheets of paper that are upright, and the poster will have printed horizontally across each page from left to right.

When Horizontal Printing is *not* selected, the poster is printed vertically in relation to the paper. If you are using 8 1/2 by 11 inch paper, the finished poster is assembled from sheets of paper that are sideways, and the poster will have printed vertically across each page from top to bottom.

To see the order in which the pages will be printed, place the pointer in the upper left corner of the poster and look at the number to the right of Page in the bottom right corner of the screen. (The upper left corner of the Page Grid is always the first page to print.) Next, move the pointer one page down or one page to the right and check the page numbers. You'll quickly find the order in which the pages are printed. This feature is also important if you want to print only a small section of the picture. Using the pointer, you can find the starting and ending page numbers for the section you want to print.

COLORS



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This chapter takes you through a quick tour of Colors's primary features. Although it doesn't cover every aspect of the program, the tour will show you how each of the gadgets on the Command Screen work with step-by-step examples. Once you've completed this tour, you'll be well equipped to use the program on your own. If you need information about a feature not specifically covered in the Guided Tour, take a look in the Colors Reference Section. There you'll find each feature of the program explained in detail.

WHEN YOU START

When you first start **Colors**, the **Colors** Command Screen opens in the lower half of your monitor and the upper half of the monitor shows the Workbench screen below the Command Screen. The gadgets on the command screen are not active until you load a picture with which to work. So let's do that now.

LOADING A PICTURE

- To load a picture, select Load from the Project menu. (To do this, move the cursor onto the Command Screen, hold down the right mouse button to display the menus, point to the Project menu, pull the highlight down to Load, and release the mouse button.)

The Load Requester appears for selecting a picture to load. This requester works exactly like the requester described in the Getting Started section of this manual.

- Press V to display the volumes. Click the volume PhotoLab Art to display the contents of that disk. Click the directory HAMx400 to display the contents of that directory. Click the file PhotoGirl and click Load to load that picture.

In a moment, a picture of the photo girl holding a camera appears behind the Command screen.

THE COMMAND SCREEN

Now that you have a picture loaded, more information appears in the **Colors** Command Screen. As you can see, there are many gadgets on this screen. Figure 8.1 below shows the Command Screen with each of the parts labeled for easy reference. In the rest of this chapter, we'll take a quick look at all parts of the screen. Then we'll use a few options in the menus.

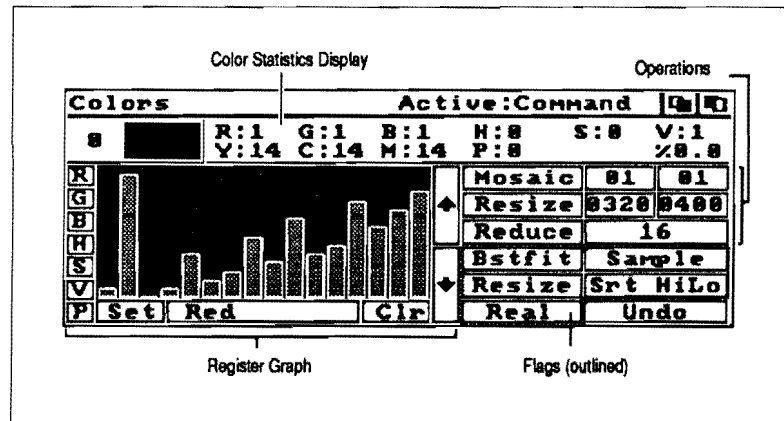


Figure 8.1 The Colors Command Screen

WHICH SCREEN IS ACTIVE?

When you have two screens open in addition to the Workbench, it's important to know which screen is the active screen. The **Colors** Command Screen helps you with this by displaying the name of the active screen on the right side of the Title Bar. At the moment, the Title Bar displays "Active: Command" to tell you that the Command Screen is the currently active screen.

- To make a screen the active screen, you simply click on it with the left mouse button. Click on the picture screen now to see how this works.

The Title Bar on the Command Screen now displays "Active: Picture". When the Colors Palette is active (you will see the Palette later in this chapter), the Title Bar displays "Active: Palette." If a screen other than one of these three is active, Colors cannot identify the screen and displays "Active Unknown" in the Title Bar.

MOVING THE SCREEN OR PICTURE

You can move Colors screens just as you would any other Amiga screen.

- Point to the title bar of the screen you want to move, hold down the left mouse button and drag the screen up or down.

You can also move the picture inside its screen. Here's how:

- Make the Picture Screen current by clicking on it, then point to the picture, hold down the right mouse button and drag up or down. (If it doesn't move, you're at the top or bottom of the picture.)

If the picture is wider than the Picture Screen (PhotoGirl is the same size as the screen), you can also drag the picture to the left or right in the same way.

THE COLOR STATISTICS DISPLAY

Directly below the Title Bar in the Command Screen, you see the Color Statistics Display. This area shows information about the components of any color in the picture.

- To obtain information about a color, place the cross-hair on that color in the Picture Screen and press the left mouse button.

If you hold down the mouse button and move the cross-hair around, the Color Statistics Display will continually update to show information for the color under the cross-hair.

- To get a closer look at the pixels you are pointing to, press **Shift** while you hold the mouse button down.

This brings up a small grid of magnified pixels, which shows the area around the cross-hair. The pixel in the center of the grid is the selected pixel, the one directly in the center of the cross-hair. If you hold down **Shift**, the grid of magnified pixels remains beneath the cross-hair. If you release **Shift**, the grid remains at the point where you released **Shift**, but the grid continues to show the pixels under the cross-hair.

The Color Statistics Display gives values for the following color components:

Red, Green, and Blue (RGB)
Hue, Saturation, and Value (HSV)
Yellow, Cyan, and Magenta (YCM)

These values identify a color more exactly than you can by looking at it on the screen. This is particularly true if you are working with fine shadings of what appears to be the same basic color. If you aren't familiar with color theory, take a look at Appendix A: A Little Color Theory, where you'll find information about how Red, Green, and Blue are combined to form a color in additive color theory.

In addition to information about a color's components, you can determine the number of pixels on the screen that are using that color. This pixel count is called the Population (P) of the color. You can also see the percent (%) of the total pixels that the Population number represents. At the moment, all of the colors show a zero population, because this pixel count is not calculated until you click the **P** button in the lower left corner of the Command Screen. (We'll explain this button in a moment.)

The area on the left side of the Color Statistics Display shows the currently selected color and the color register number that the color is assigned to.

- For example, if you hold down the mouse button and move the cross-hair around in the red lettering of the slogan, you'll find that this color area is entirely dark red and the dark red color is assigned to color register 10.

In HAM display modes, colors that are not register colors (called HAM colors) are labeled by the color component that was changed, and the value to which it was changed. For example, R3 would indicate that the current HAM pixel is the same color as the pixel before it (to the left), except that the Red component has been changed to a value of 3. This means that HAM pixels with the same identifying number could be different colors depending on the color that preceded them. If you'd like a more detailed explanation of how Hold and Modify modes work, take a look at Appendix B: Amiga Display Modes.

THE REGISTER GRAPH

The large bar graph below the Color Statistics Display is the Register Graph. It shows the relative content of a color component in each of the color registers. At the moment it displays the relative red content of each register.

The leftmost bar in the Register Graph is always Color Register 0, the next bar to the right is Color 1, and so on. You can see which color is assigned to a particular register by clicking on that register.

- Click the first bar to see the color that is assigned to Color 0. (Clicking anywhere in the space above a bar is the same as clicking on the bar.)

The information for Color 0 appears in the Color Statistics display. (The bar also turned red to indicate that the register is now locked, we'll explain what that means in a moment.) The bars in the register graph also help you to see which areas of the picture are using a particular color register.

- Point to the bar representing Color 0 and hold down the left mouse button.

This causes all of the pixels that use Color 0 to flash.

RGBHSVP BUTTONS

The buttons to the left of the Register Graph determine which color component is represented by the graph. There are buttons for Red (R), Green (G), Blue (B), Hue (H), Saturation (S), Value (V), and Population (P). When you first start Colors and load a picture, the Register Graph displays the relative red content

of each register. (The word Red just below the Register Graph reminds you that the red content is being displayed.) If you click the G button, the relative green content of the registers is displayed.

The Population button (P) is particularly important.

- Click P now.

When you click P, Colors counts the pixels in the picture and displays the relative pixel count for each register in the graph. Also, the Color Statistics Display now shows the pixel count for the current color and the percent of the total that this count represents.

ARROW BUTTONS

The arrow buttons to the right of the Register Graph let you change the color content of pixels. For example:

- Click the R button to display the red content of the pixels. Finally, click the up arrow twice (wait for the first change to complete before clicking the arrow the second time).

You'll see that the picture becomes very slightly redder and the bars in the graph increase in height. (Notice that the bars change proportionally. That is, tall bars grow or shrink faster than short bars in order to retain the relative heights).

- Click the down arrow twice to return the picture to its original state.

Finally, click somewhere else in the Command Screen.

You'll see the message "Commit Changes" in the Progress Display. After you've made changes to the Red, Green, or Blue color values with the arrow buttons, clicking on an area of the screen other than the RGB buttons, the arrows, or the Undo button "commits" your changes. (This extra step isn't necessary when you use HSV. You'll find more information about this in Chapter 10, **Colors Reference**.)

LOCKING REGISTERS

You've already seen that a register can be locked or unlocked. This is an important distinction, because locked registers are not affected by changes to the Register Graph. This means that you can change the values in selected registers, and thus change only selected colors of a picture. Let's see how that works by changing everything except the slogan and the word PHOTOLAB at the bottom of the picture.

- First you need to identify the register colors that you want to lock. You can do this by pointing to each of the register bars and holding down the left mouse button to see which areas of the picture flash. You want to lock the red that is used in the slogan and the blue of PHOTOLAB. (We'll tell you right now that you want to lock registers 5 and 10—remember that the first bar on the left is register 0.)
- Once you have identified the registers you want to change, and have locked the others, click the G button.
- Click the Up-arrow three times (wait for each change to complete before clicking again) and watch as the picture becomes greener while the slogan and PHOTOLAB remain the same.
- Now click the Down-arrow three times to return the picture to its original colors.

In addition to locking and unlocking registers individually, you can lock all of them at once by clicking Set or unlock all of them by clicking Clr.

SORTING THE GRAPH

You can sort the Register Graph by selecting a sort from the menus. Here's how it works:

- Click Clr to unlock all of the registers.
- Select Sort On from the Color menu and select Population from the submenu presented by Sort On.

In a moment your Register Graph is sorted based on the pixel count of each color register. Notice that the Register Graph automatically changed over from displaying the Green content to displaying the Population.

When you sort the Register Graph, you are also sorting the picture's palette and, as a result, pixels in the picture may receive their color from a different color register. The colors in the picture don't change, but the register number they use does. For example, when we explained how locking a register works, we had you lock register 5 to keep the word PHOTOLAB from changing color. If you check now, you'll see that the blue in PHOTOLAB is now assigned to register 6 as a result of sorting on Population. If you sorted the picture on Red content, this color blue would be assigned to color register 14.

Sorting the picture on Population is especially useful because it allows you to quickly determine which colors in your picture are using the fewest pixels. This is important if you need to reduce the number of color registers being used in the picture. In the next chapter, we'll show you how to use the Sort option and the Palette to reduce the number of color registers used by a picture.

You can sort the graph on any one of the attributes, in the Sort On submenu. You'll notice that the first seven options are the same as the attributes represented by the RGBHSVP buttons. The last option, Locks, sorts the graph so that all locked registers are moved to one end of the graph.

OOPS, THAT'S NOT WHAT I WANTED

There is one very important gadget on the Command Screen that you need to know about now; it's the Undo button in the lower right corner. Clicking Undo reverses the last operation you performed, as long as there was not an intervening mouse click or keyboard command.

- Click Undo now.

If you didn't click anything after selecting Population from the Sort On submenu, the Register Graph returns to its unsorted state. Note that you can't Undo an Undo.

THE FLAGS

The black buttons around Undo are the Flags. Each of these buttons has two settings.

- Click the Srt HiLo button, above the Undo button.

When you click this button it changes to Srt LoHi. This button controls whether your sort of the registers is arranged from the highest value to the lowest (Srt HiLo) or from the lowest value to the highest (Srt LoHi). To see how this works do the following:

- Set the button to Srt HiLo and select Red in the Sort On submenu of the Color menu.

The result is a Register Graph displaying color registers in descending order based on their red content.

- Now set the button to Srt LoHi and select Red sort again.

This time the Register Graph displays the registers in ascending order based on their red content.

The other flags work in a similar fashion: each has two settings, and the setting determines how some other operation is performed. You'll find information about all of these flags in the Reference section for Colors. In that section, each flag description lists the operations that are affected by the flag.

REAL/TEST

The most important flag for you to understand right now is the Real/Test flag. While you've been working with Colors, you've been working with the Real flag set, so that your changes and operations have actually affected the picture. If you change the setting to Test, most operations will only affect the appearance on the screen, and changes that might otherwise be permanent can now be reversed.

- Set the Real/Test button to Test now so that you will be able to undo the operations we'll show you next.

THE OPERATIONS

Above the Flags there are three red Operation buttons. These buttons perform some operation on the picture that requires you to set values before you select the operation. The three Operation buttons are Mosaic, Resize, and Reduce. Let's take a quick look at Mosaic to see how the Operations work.

Mosaic breaks the picture up into regions and changes all of the pixels in each region to a single color. (The color used for a region depends on the colors in the region, and on whether the Sample/Smooth flag is set to Sample or Smooth. You'll find more information in the Reference section about Sample and Smooth. For now, leave the flag set to Sample.)

The first thing you need to do is to set the numbers beside Mosaic. These numbers determine the horizontal and vertical dimensions for each region. The regions are measured in pixels.

- Place the pointer on the top half of the number 1 beside Mosaic and click the left mouse button three times to set the number to 4. Do the same with the other number.

Clicking with the pointer on the top half of a number increments the number. Clicking on the bottom half of the number decrements the number. You can also position the pointer and hold down the mouse button to increment or decrement the number continuously until you release the mouse button.

- Once you've set both numbers beside the Mosaic button to 4, click Mosaic.

In a second, the picture changes to a mosaic of rectangles.

- Click Undo to reverse this change and try some other Mosaic settings. Be sure to Undo after each change so that the picture will be back to normal when you move on to the next section.

THE PALETTE

- Select Palette from the Color menu to bring up the Palette window.

The Palette is a color coded version of the Register Graph, but it has a different function. The Palette gives you control over the arrangement of registers and how colors are mapped to the registers. This is important if you want to combine elements from different pictures. You'll learn more about the Palette in the next chapter if you work through the Palette tutorial or you could simply use the Colors Reference section to learn how the Palette functions work.

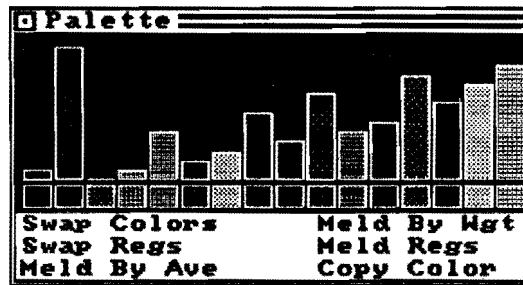


Figure 8.2 The Colors Palette

- To close the Palette, click the close box in the upper left corner of the Palette window.

SOME QUICK EFFECTS

In this section you'll get a quick look at some powerful features of Colors that are available through simple menu selections. The best way to understand these features is to see them work, so we'll have you select them one by one and then Undo the change.

- Make sure that the Test flag is set before you perform these operations, because some of them are not undoable otherwise.

SEPARATE:

The Separate option in the color menu offers a submenu of options to separate the colors of your picture on Red, Green, Blue, Yellow, Cyan, Magenta, and Black. Selecting Green, for example, will provide a "green-only" separation of the picture.

- To understand how this works, click any color in the picture and look at the RGB values shown in the Color Statistics Display.
- Now, select Green from the Separate submenu of the Color Menu.

The picture turns completely Green, and you'll notice that Red and Blue values for the color you clicked are now zero, but the Green value is the same as it was before the separation.

- Click Undo to reverse this change.

MATCH PALETTE

This option lets you match the current picture to the Palette of another picture. In effect, your current picture will use the colors from the other picture, but attempt to preserve the appearance of the current picture as closely as possible using the new colors. In HAM mode, the results can be surprisingly good. Let's see how it works:

- First, select Palette from the Color menu to bring up the palette, and look at the colors that appear there.

You'll see that the register colors are mostly dull greens and browns with a single red register and a single blue register.

- Now, select Match from the Color menu.

This brings up the Match Requester, which works just like the Load Requester, except that it loads only the Palette of the file you select.

- Click the volume PHOTLAB ART: to display the contents of the art disk. Click the directory HAMx400 to open it. Click the file Astronaut and click Match.

It will take a minute or two for **Colors** to remap the PhotoGirl picture to the Palette from Astronaut. As the operation is underway, the Register Graph shows you the progress of the operation. Notice that the picture looks almost exactly as it did before. Some of the detail at the edges of the lettering was lost, but it takes a good eye to notice this. Notice that the palette contains no medium blues, and yet the blue lettering of PHOTOLAB is preserved. (Drag the picture up to see for yourself.) **Colors** was able to duplicate the medium blue pixels by using HAM colors instead of register colors from the Palette.

- Click Undo to reverse the Match operation.

MAKE B/W

The Make B/W command converts your picture to a Black & White image.

- Simply select Make B/W from the Color menu and watch as the picture is converted.

When the operation is complete, the Palette will consist exclusively of grays. Click Undo to return to a color image.

NEGATIVE

The Negative option instantly converts your color picture to a negative image.

- Select Negative from the Color menu.

Notice that the reddish areas of the picture change to cyan and the blue areas become orange. The resulting colors are the colors that appear on the opposite side of the color wheel. The blue lettering would have become yellow if it were a true blue, but the blue that is used contains a large amount of green.

- Click Undo to return to the color image.

CHANGING DISPLAY MODES

With **Colors**, you no longer have to worry about whether your pictures are in compatible display modes. In one simple step, **Colors** will convert a picture in any mode, to any other mode. You'll probably want to convert Low Resolution and High Resolution pictures to HAM mode, but, as an example, we'll convert the PhotoGirl picture to a Low Resolution Interlaced picture.

- Open the View Modes menu to see the options there.

This menu contains only one option, **Set To**. Below the **Set To** option, the menu lists the **Current Info** for the picture you have loaded. Notice that our picture is in HAM Interlaced mode.

- Select **Set To** from the menu.

This option presents a list of all the possible display modes. We want to convert to Low Resolution Interlaced.

- Select 320x400 from the submenu.

You receive a warning that this operation may not be undoable.

- Click **Okay** to proceed.

Next you are asked to select the color reduction sensitivity for the operation. There are three options. Essentially, **Colors** performs more precise calculations if you select **High**, but the trade off is that a large picture may take a long time to convert.

- Right now, click **Low** so that the operation takes as little time as possible.

You can come back later and choose one of the other options to see how much it improves the conversion. As the conversion proceeds, you'll see the messages **Counting Pixels**, **Reducing Colors**, and **Redraw Pictures** appear in the left side of the **Color Statistics Display**, and the **Register Graph** will change to the **Progress Display** to show you how much of the process is completed.

- When your picture is completely converted, open the View Modes menu to see the **Current Info** for the picture.

Keep in mind that this conversion only affects the picture in memory, it does not affect the disk file. Right now, we'll show you how to revert to the disk version of PhotoGirl.

REVERT

When you use **Colors**, you'll probably want to experiment with different Flag settings and Operations. To make it easier to experiment, **Colors** includes a Revert option. This option automatically loads the most recently saved or loaded file. Let's use it now to get the original PhotoGirl picture back.

- Select Revert from the Project menu.

A requester displays the name of the file you last saved or loaded and asks if you want to revert to the old version from disk.

- Click Okay.

In a second, you have the original picture back, without having to use the Load Requester.

This chapter introduced some of the primary features of **Colors** and explained how the gadgets in the Command Screen work. This is probably enough to get you started, but it is by no means a complete introduction to **Colors**. For example, this chapter only briefly mentioned the Palette, but the next chapter will show you how it's used. You'll find information about other features in the Reference section. Here are some of the features we particularly recommend reading more about:

Save options in the Project menu. (In particular, you may want to enlarge a picture to a size much larger than **Colors** can hold in memory. To do this, you would use the Save Resized option.)

Planes option in the Color menu. (This option lets you reduce the number of bit planes used by the picture, and **Colors** recalculates the picture to give you the best possible image with fewer colors.)

The Resize and Reduce operations. (These options let you change the size of the picture or the number of colors the picture uses.)

The Bstfit/Trunc, Sample/Smooth, and Resize/SizeOK flags. (Since these flags affect how the Operations and menu options are performed, you'll want to be familiar with which commands each Flag affects.)

This chapter takes you through step-by-step exercises that cover some of the major features of Colors. You'll learn how to reduce the number of color registers used by a picture, how to change the display mode of the picture, how to manipulate the Palette, and how to change the size of the picture.

WHAT YOU'LL NEED

To complete these tutorials, you'll need your working copies of the DeluxePhotoLab program disk and art disk. If you want to save your work, you'll need an initialized disk with a fair amount of available space for saving large files. Finally, you'll need a little time if you want to complete this chapter in one sitting. We estimate this tutorial takes twenty minutes to complete, because the operations you'll perform give the Amiga a number-crunching workout.

To begin these tutorials:

- Start **Colors** and load **PackageCover** from the **HAMx400** directory on the **DeluxePhotoLab** art disk.
- Select **Sort On: Population** from the **Color** menu.

We have you sort on population to place the least used color registers at the right end of the **Register Graph** and **Palette**. This way, we know exactly which colors are where, and the **Reduce** operation will clear the two registers with the lowest population count.

1 REDUCING THE NUMBER OF COLOR REGISTERS USED

There are three ways you can reduce the number of color registers used by the picture:

Use the Reduce operation on the Control Screen, which performs the color reduction in a completely automatic fashion.

Strip away bit planes, which also automatically reduces the number of color registers.

Meld registers in the Palette Window.

We'll look at each one of these methods. And in the course of the tutorial, we'll also change the display mode of a picture.

THE REDUCE OPERATION

Before you do anything else, take a look at some of the RGB values for color registers in the graph. After you perform the color reduction, only the last two registers will retain the same values (but no pixels in the picture will use them). The other color registers will change RGB values as **Colors** tries to maintain the look of the picture. Here's how to reduce the colors automatically:

- Click CLR so that no color registers are locked.
- Set the number beside Reduce to 14.
- Click Reduce.

A message reminds you that this operation cannot be undone.

- Click Okay.

A second message asks which level of color reduction sensitivity you want to use.

- Click Low.

This operation will take a moment; we had you click Low because it takes the least time, though it generally doesn't produce the best results. The Progress Display flashes the messages Count Pixels, Filter Colors, Reduce Colors, Redraw Picture as it performs the reduction.

- When the Reduce operation is complete, click P so the Register Graph displays the population of each register.

Note that the graph is no longer sorted on Population. Also, if you check the color values of the registers, you'll find that none of the registers maintained their color values (except the last two which are no longer being used by the picture). This is because Colors tries to preserve the appearance of the picture with fewer registers, and to do so, it needed to change the colors in the registers that are used.

- Select Sort On: Population from the Color menu.

Now the graph is once again sorted by population, and you can clearly see that no pixels are using the last two color registers. Note that although the color registers are not used in the picture, they still exist, so if you loaded the picture into Paint, you could set new colors in these color registers without affecting the rest of the picture.

Another important point to remember is that, although the number of color registers used by the picture is now reduced, the number of colors in the picture is the same. This is because we are working with a Hold and Modify picture. In Hold and Modify display mode, Reduce converts the register colors to HAM colors when it empties a color register. If this were a Low Resolution picture, Reduce would only have register colors to work with, and the number of colors in the picture would be equal to the number of color registers being used.

SETTING A NEW DISPLAY MODE

Changing the display mode of PackageCover from HAM to Low Resolution will result in an increase in the number of color registers (from 16 in HAM to 32 in Low Resolution), but a decrease in the number of colors actually in the picture, (because HAM can use colors that do not come from color registers, but Low Resolution uses only colors from color registers.)

- Select Revert from the Project menu to get back the original PackageCover picture.
- Select Sort On Population from the Color menu to sort the color registers on population.
- Select Set To: 320x400 from the View Modes menu to convert the picture to Low Resolution Interlaced mode.

A message appears to remind you that this operation cannot be undone.

- Click Okay.

A second message asks which level of color reductions sensitivity you want to use.

- Click Low.

The Progress Display flashes the messages Count Pixels, Filter Colors, Reduce Colors, Redraw Picture as it performs the display mode conversion.

Now the picture has twice as many color registers, but it uses far fewer colors than before. You'll use the picture in the next section to see how stripping planes from the picture affects the number of color registers available.

STRIPPING AWAY BIT PLANES

The number of bit planes used by a picture determines the number of color registers available in the picture. (See Appendix B: Amiga Display Modes for more information about the relationship between bit planes and color registers.) **Colors** lets you remove or add bit planes. Right now we'll reduce the number of colors in a picture by stripping away a bit plane. In the case of our Low Resolution Interlace picture, removing one bit plane will reduce the number of color registers from 32 to 16.

- Select Planes: 4 Planes from the Color menu.
- Answer Okay and Low to the messages that appear.

In a moment, your picture is reduced to sixteen colors. Notice that reducing the number of bit planes both removes the colors from the picture and deletes the color registers from the Palette. The Reduce operation removed the colors from the picture but left the color registers in the Palette.

PALETTE MANIPULATIONS

If you simply want to rearrange color registers, or if you want to make a very specific color reduction, the Palette Window is a good place to do it. Before you begin this series of Palette manipulations, do the following:

- Revert to the original picture from disk.
- Click P to display the Register Graph based on Population.
- Select Palette from the Color menu.
- Press F5 on the keyboard to hide the Command Screen. Now drag the Palette Window down to the lower half of the screen so you can see the upper area of the picture clearly.

As you briefly saw in the **Colors** Guided Tour, the Palette Window presents another graph of the color registers. Each bar in the graph is drawn in the color of the register it represents. This helps you make decisions about which registers to manipulate.

Below the graph in the Palette Window, you see six operations that can be performed with the Palette. These are fairly easy to understand, but we'll run through them quickly anyway. If you are confident you already understand any of these operations, feel free to skip the explanation and move to the next. The Meld operations are most important to this exercise. They let you reduce the number of registers used, without making global changes to the color values as the Reduce operation does.

SWAP COLORS

This operation simply swaps the color values assigned to two registers.

- Click Color 1, the second register from the left in the Palette Window. (It's color should be white at the moment.)

When you click a register in the Palette Window, a small rectangle at the bottom of the register bar marks it as the currently selected register.

- Click Swap Colors.
- Click Color 15, the last register in the Palette Window.

When you swap colors in the Palette, the colors in the picture also change, because the pixels are pointing to the same registers as before, but those registers now contain different colors. In our case, the skylight in the ceiling above the world now has a yellow light rather than white, and the bright area behind the world is white instead of yellow.

You can undo changes in the Palette as long as you don't perform any other operation before you click Undo.

- Press F4 on the keyboard to bring up the Command Screen.
- Click Undo.
- Press F5 to hide the Command Screen again.

Now your picture and the colors in the palette are restored to their original order.

SWAP REGISTERS

This operation changes the order of colors in the Palette without changing your picture.

- Click Color 1 (white).
- Click Swap Registers.
- Click Color 15 (yellow).

Now Color 1 is yellow and color Color 15 is white. (You can't actually see the color of Color 1 because the rectangular marker is covering it. Click another register to move the marker.)

The ability to swap color registers is important, because the Reduce operation always reduces by eliminating the color registers at the right end of the graph (the highest register numbers). This gives you some control over which color registers are eliminated in a reduction.

- Reverse this last change by clicking Undo in the Command Screen. (Press F4. Click Undo in the Command Screen. Press F5.)

COPY COLORS

This operation copies the current color into the register you select.

- Click Color 1 (white)
- Click Copy Color.
- Click Color 15 (yellow).

Color 15 becomes white, so you have two white registers.

- Reverse this last change by clicking Undo in the Command Screen.

MELD BY AVERAGE

This operation lets you change two colors to a third color that is the average of the first two. In the Palette for PackageCover, Color 0 is black and Color 1 is almost white. We'll meld these two together to make them the same color.

- Click Color 0
- Click Meld By Average.
- Click Color 1.

The resulting color is gray. And both registers contain grey because you performed a meld.

- Reverse this change by clicking Undo in the Command Screen.

MELD BY WEIGHT

Meld By Weight works exactly like Meld By Average. But instead of combining the colors in a simple Average, Colors uses the population (number of pixels) of each register to determine which should receive the most weight when mixing the two colors.

- Click Color 0.
- Click Meld By Weight.
- Click Color 1.

This time the resulting color is black, because Color 0 (black) is used by many more pixels in the picture than Color 1 (white).

MELD REGISTERS

Meld Registers takes all of the pixels from one register and points them to a different register, so that no pixels are using the first register. The register is now free to be used by any other color, without affecting the picture.

- Click Color 1.
- Click Meld Registers.
- Click Color 0.

Now Color 1 is not used by any pixels in the picture. If you click another color register to move the rectangular marker, you'll see that Color 1 is crossed by diagonal slashes to indicate that it is not in use.

Remember, if you ever need to free up a single color register without changing the colors assigned to the other registers, use Meld Registers in the Palette Window.

2 RESIZING THE PICTURE

Colors is especially good at resizing pictures, and it's Save Resized option lets you create pictures that are larger than can fit in the computer's memory. Right now we just want to take a quick look at the Resize operation on the Command Screen and say a word or two about Save Resized.

THE RESIZE OPERATION

To resize a picture in the computer's memory, and continue to work on it afterward, use Resize. The Resize operation is affected by the Sample/Smooth flag. If this flag is set to Sample, the resize operation is done *without* anti-aliasing, and resizing the picture larger results in some "jaggedness." When the flag is set to Smooth, Colors removes the "jaggedness" through anti-aliasing. In our example, we'll size the picture only slightly larger, since the image is in HAM Interlace mode and therefore takes up a great deal of memory already.

- Bring up the Command Screen and select Revert from the Project menu to restore the original picture.
- Set the Sample/Smooth flag to Smooth.

- Set the first number to the right of **Resize** to 352. (Point to the upper half of each digit and click to raise the number.) Set the second number to the right of **Resize** to 440.
- Click **Resize**. Then click **Okay** when the message reminds you that this process is not undoable.

This operation is going to take a while, but if you ever need to enlarge a picture, you'll happily spend the extra time for the remarkably sharp result it produces. When the **Resize** operation is complete, make the picture screen active, then click the picture with the right mouse button and drag it back and forth to prove to yourself that it is in fact wider. We doubt that you can see any degradation in the picture quality.

SAVE RESIZED

We won't have you perform this operation, but we thought we should mention that the **Save Resized** option works exactly like the **Resize** operation. The **Sample/Smooth** flag determines whether or not the picture should be smoothed when sized larger, and you set the width and height dimensions using the numbers beside **Resize** on the **Command Screen**.

Try it out if you like. **Resize** the picture to twice its normal size and load it into **Paint** to prove that it is larger. One caution though, be sure there is enough room on your disk to hold the picture file.

These tutorials showed you two of the important features of Colors. We couldn't tell you everything though. If you ever need information about an option, be sure to check the next chapter, Reference. There you'll find a complete explanation of all features.

This chapter summarizes all of the commands and functions in Colors. Because this chapter is intended for reference only and not as a way to learn the fundamentals of Colors, the descriptions are as concise as possible. If you read an entry in this chapter, but don't fully understand how the feature works, check the Index to see if the feature is explained with examples in one of the earlier chapters.

The information in this reference is organized into two major sections. The first half of the chapter explains the gadgets on the Command Screen. The second half of the chapter describes the function of each of the menu options working through the menus from left to right and top to bottom.

1 THE PICTURE SCREEN

When you load a picture in Colors, the picture is held on a separate screen behind the Command Screen. You won't be able to see all of the screen at one time. If you want to see a part of the screen that isn't visible, you can scroll the screen using the arrow (cursor) keys. Holding down **Shift** with the arrow keys moves the screen in larger jumps. You also can point to the picture, click the left mouse button to make the picture screen active, hold down the right mouse button (the pointer changes to a four arrow cursor), and drag the picture in any direction you like. Once you have reached an edge of the picture, you can not drag any further.

2 THE COMMAND SCREEN

When you first start Colors you see the Command Screen. This screen has several parts with different functions, as you can see in Figure 10.1. The following pages describe the functions of each part of the Command Screen.

There is one important thing you should understand about working with the Command Screen and a Picture Screen. The first time you click on a screen, it will have no effect. The first click only makes the screen active. Then you can work with that screen. In the case of the Command Screen, you can then use one of the functions. In the case of the Picture screen, you can then move the picture around with the right mouse button as explained above. To be on the safe side, it is

advisable always to click on the Color Statistics Display when you want to make the Command Screen active. Since the Color Statistics Display doesn't perform any function other than to display information, you can click there without any fear of changing your picture inadvertently.

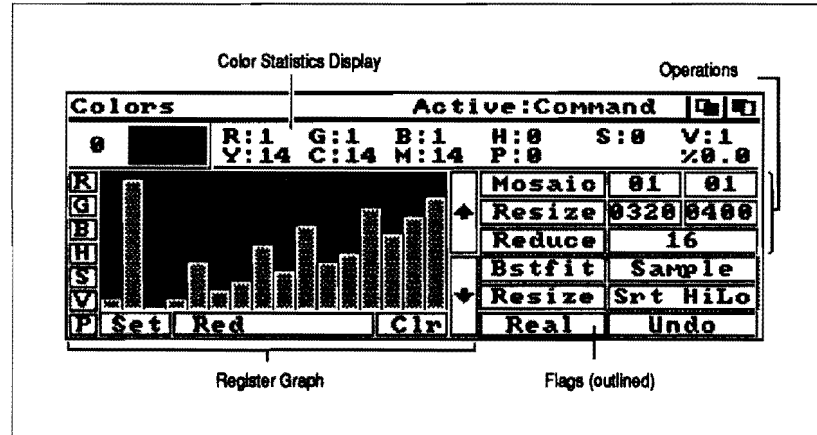


Figure 10.1 The Colors Command Screen

TITLE BAR

The Title Bar at the top of the Colors Command Screen shows the name of the program on the left side and the name of the active screen on the right side. The screens are called "Command" for the Command Screen, "Picture" for the screen of the picture you are working on, and "Palette" for the palette window. If none of these screens is active, then the active screen is listed as "Unknown."

If the Command and Picture screens become separated from each other, and one of the screens is the active screen, you can bring them both to the front together by pressing F4.

The Front Gadget and Back Gadget on the right side of the title bar work as they do on normal Amiga screens.

MENU BAR

When the Command Screen is active and you press the right mouse button, the Menu Bar displays the menu names. Then pointing to the menu name opens that menu.

COLOR STATISTICS DISPLAY

The area below the menu bar displays information about color values. The information given is for the currently selected color in the Register Graph, the Palette, or the Picture. (See Palette in the Color menu for information about the Palette.) To get color information about any color in the picture, click that pixel with the left mouse button.

The rectangle on the far left of the Color Statistics Display shows the register number currently selected and the color that occupies that register. If the pixel is a HAM pixel selected from the picture, the letter and number displayed indicates which component of the preceding pixel (the pixel to the left) was modified and to what value. For example, R15 means that the current pixel is the preceding pixel with the Red component changed to a value of 15. If you are using Extra-Halfbrite and the pixel is an Extra-Halfbrite pixel, this is indicated by an E before the register number. For example, E24 indicates the Extra-Halfbrite equivalent of color register 24.

The long rectangle in the Color Statistics Display shows numeric values for the red (R), green (G), blue (B), hue (H), saturation (S), value (V), yellow (Y), cyan (C), and magenta (M) content of the currently selected color register. This area also lists the number of pixels mapped to that color register, referred to as the Population (P) of the color, and the percentage (%) of the total picture that the population number represents. Values for population are not displayed until the P button has been clicked.

The levels of red, green, blue, yellow, cyan, magenta, saturation and value are assigned values between 0 and 15, with 0 representing minimum contribution and 15 representing maximum contribution.

Hue is measured in degrees from 0 to 360, where 0 degrees represents pure red. As the hue is increased, the color gradually advances along the color spectrum through yellow, green, cyan, blue, magenta and finally back to pure red.

(For a discussion of RGB color theory, see Appendix A.)

PROGRESS DISPLAY

The Progress Display appears whenever you select a function that takes a while to complete. At these times the cursor changes to the cloud shape and no input is accepted. The rectangular area on the left side of the Color Statistics Display changes to a message explaining what function is in progress. Sometimes the Register Graph also changes to graphically represent how much of the current function has been completed; this display gradually fills from left to right until the function is completed.

Note: operations that cause the Progress Display to appear can be terminated by pressing the spacebar. After you terminate one of these operations, you can clean up the display by clicking Undo or selecting Revert from the Project menu.

R, G, B, H, S, V, P BUTTONS (Keyboard Equivalents: R, G, B, H, S, V, P)

These buttons are used to select the register attribute displayed in the Register Graph. The buttons correspond to the red (R), green (G), blue (B), hue (H), saturation (S), value (V), and population (P) values of the registers.

To change the attribute displayed, click one of the buttons. The Register Graph changes to display the relative content of the attribute you selected, and the area below the Register Graph lists the selected attribute. For example, if you click R, the Register Graph displays the relative red content in each of the color registers, and the area below the graph contains the text "Red."

If you click P to display the population, the relative number of pixels that use each register is displayed in the Register Graph. In HAM and Extra-HalfBrite not all pixels are counted; therefore the percentages shown won't add up to 100%. The first time you select P there will be a short delay while the population for each register is calculated.

Note: Holding down the **Shift** key and clicking on one of the RGBHSVP Buttons displays the Palette Window, which contains a graph with each of the bars drawn in the register's corresponding color.

REGISTER GRAPH

The Register Graph shows the relative content of the attribute selected using the RGBHSVP Buttons. The first bar on the left side of the graph corresponds to color register 0, the second bar corresponds to register 1, etc.

The Register Graph is also used to lock and unlock the registers. If a register is locked, it is not affected by changes made to RGB or HSV values. Click a bar (or anywhere in the area above the bar) to lock or unlock the corresponding register. When a register is locked, its bar is red.

Below the Register Graph are two buttons for locking or unlocking all of the registers.

SET: locks all of the registers. (Keyboard Equivalent: **L**)

CLR: unlocks all of the registers. (Keyboard Equivalent: **N**)

Pointing to a bar and holding down the left mouse button causes the pixels in the picture that correspond to that color register to flash.

Holding down the **Shift** key and clicking on one of the RGBHSVP Buttons displays the Palette Window, which contains a graph with each of the color bars drawn in the register's corresponding color.

ARROW BUTTONS

Used to increment or decrement the currently selected color attribute (selected using the RGBHSVP Buttons) in all unlocked color registers. (**Note:** HAM colors cannot be locked because their color is not taken from color registers. Locking a color in Extra-HalfBrite also locks its Extra-HalfBrite component.)

The amount of change in a register attribute is proportional to the initial values in the current picture. In other words, the registers with larger initial values will increment or decrement in larger steps to maintain the relative balance of all the register values.

If you increment or decrement the R, G, or B component in a HAM picture, all unlocked colors (including all HAM colors) are affected. However, the change is only temporary. Once you select some function other than R, G, B or Undo, the change becomes permanent. You will notice that a message "Commit Changes" appears at the left side of the Color Statistics Display as soon as you click another function. (Note that the temporary nature of the changes does not mean that clicking Undo reverses all of the changes you've made using the Arrow Buttons; Undo only reverses the last change.)

The changes are made only temporarily at first so that each click of the Up-Arrow has an equal and opposite effect to clicking the Down-Arrow. If you click the Up-Arrow, Commit the changes, and then click the Down-Arrow, clicking the Down-Arrow may not exactly reverse your earlier click of the Up-Arrow. This is because information about the original relationship between color values (particularly of HAM pixels) no longer exists; you are changing the new image, where the relationship between color values may be different.

If you increment or decrement the H, S, or V attribute in a HAM picture, the change affects only pixels that get their color directly from the color registers. HAM pixels retain their original color.

OPERATIONS

There are four operations available directly from the Command Screen.

MOSAIC (Keyboard Equivalent: M)

Reduces the resolution of the current picture by replacing the colors in the selected region size with a single color.

The numbers to the right of the Mosaic button determine the size of each region that is converted to a single color. The first number determines the width of the region in pixels, and the second number determines the height of the region in pixels. The maximum setting for each dimension is 50.

To increase the size of the mosaic regions, place the pointer on the top half of a number and click the left mouse button. The number increases by one for each click. If you hold down the mouse button, the number continues to increase until you release the button. To decrease the number setting, place the pointer on the bottom half of the number and click or hold down the mouse button.

This operation is affected by the the Smooth/Sample flag. If Smooth is active, Mosaic will average the pixels in a region to determine the new color for that region. If Sample is active, the new color for each region is the color that occurs in it's top left pixel.

RESIZE (Keyboard Equivalent: Z)

Resizes the current picture to the dimensions in the number gadgets to the right of the Resize gadget. The first number sets the new width of the picture and the second number sets the new height. When you first open Colors, the resize dimensions are set to 1x1. The maximum setting is 9999 x 9999, though the actual maximum is determined by the amount of computer memory available. If you set the dimensions for a size larger than can be created, a requester tells you that Colors could not get enough memory for the function.

To change the dimensions settings, place the pointer on the top half of a number and click the left mouse button. The number increases by one for each click. If you hold down the mouse button, the number continues to increase until you release the button. To decrease the number setting, place the pointer on the bottom half of the number and click or hold down the mouse button.

In Test mode, Resize only affects the screen image, and any attempt to move the screen returns the picture to its "real" state in memory.

This operation is affected by the setting in the Sample/Smooth flag.

REDUCE (Keyboard Equivalent: C)

Used to reduce the number of color registers used in the current picture. The number to the right of the Reduce button shows the number of color registers available in the current display mode. You can change this number to a number less than the current number of registers used, but you cannot set it to a higher number.

To change the color register number, place the pointer on the top half of a number and click the left mouse button. The number increases by one for each click. If you hold down the mouse button, the number continues to increase until you release the button. To decrease the number setting, place the pointer on the bottom half of the number and click or hold down the mouse button.

When you click Reduce, a message asks you what level of color reduction sensitivity you want to use. The choices are High, Medium, and Low. High generally produces the best result, but the results depend on many factors, and occasionally a picture looks better when converted using Medium or Low color reduction sensitivity.

Note that you won't be able to see that color registers have a zero population until you perform a population count by clicking the P button or by sorting the palette on population.

UNDO (Keyboard Equivalent: U)

Reverses the last operation if that operation is undoable.

FLAGS

BSTFIT / TRUNCT (Keyboard Equivalent: F)

Changes in display mode made by selecting from the Set To: submenu, and changes in the number of Planes are affected by this flag.

When Bestfit is active, changes in the number of color registers also remap the picture to maintain the "look" of its color content. If Truncate is active, the picture is not remapped to preserve its "look".

SAMPLE / SMOOTH (Keyboard Equivalent: O)

This flag affects the Mosaic and Resize operations (including display mode changes). When Sample is active, changes in the size of the picture simply expand or reduce the original without attempting to preserve the look of the content. When Smooth is active, the contents of the picture are considered in the resizing operation and the edges between pixels are "smoothed" (in a process known as anti-aliasing) so that the resized picture more closely resembles the original.

RESIZE / SIZE OK (Keyboard Equivalent: K)

This flag affects display mode changes made using the Set To: option in the View Modes menu. When Re-size is active, changes in mode also resize the picture to scale when necessary to preserve the proportions of the image. If Size OK is active, the picture is not scaled when the mode is changed and the resulting picture may be out of proportion.

SRT HiLo / SORT LoHi (Keyboard Equivalent: I)

This flag affects sorting of the Register Graph and Palette done with the Sort On: option in the Color menu. If Srt HiLo is active, sorts will place the registers with the highest values to the left. If Srt LoHi is active, sorts will place the registers with the lowest values to the left.

REAL / TEST (Keyboard Equivalent: T)

This flag affects Resize, Mosaic, HAM color changes from the Color menu, and some Match operations. When Real is active, all operations affect the actual picture data. When Test is active, only the screen image is affected by changes you make with the commands listed above; the picture data in memory remains unchanged. You can only perform one operation on the screen in Test; subsequent operations automatically return the picture to its "real" state before performing the new operation. Some operations that are not undoable in Real mode, become undoable in Test mode.

3 MENU ITEMS

Colors's menu items remain hidden until you move the cursor to the top of the screen and press the right mouse button. As you move the cursor horizontally across the Menu Bar, one after another of the menus drops down to reveal its selection of options. Moving the cursor down the selection of options highlights each one. Releasing the mouse button when a menu option is highlighted selects that option. Some options reveal secondary menus to their right. To select a secondary menu item, move the cursor to the right (while continuing to hold the button down) to highlight the secondary menu item, and then release the button.

In many cases, you can select a menu item by using its keyboard equivalent. Keyboard equivalents, where available, are shown next to the corresponding item in the menus and in the descriptions that follow. You will find a table of keyboard equivalents at the back of this manual as Appendix D.

The menus, reading from left to right across the Menu Bar, are as follows:

PROJECT MENU

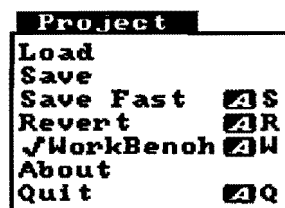


Figure 10.2 The Project Menu

LOAD

Brings up the Load File requester. See Figure 10.3. The requester contains Load and Cancel buttons, a field to display the current directory path, a file list window with arrows and a slider for scrolling the window, and an edit field that displays the currently selected file.

To load a picture, click the name of the file you want to open and then click the Load button at the top of the requester.

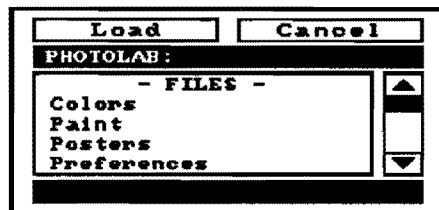


Figure 10.3 The Load Requester

In addition to files, the window displays Directories, Volumes, and Clipboards. If you click a subdirectory name, the window displays all of the files contained in that subdirectory. Clicking the listing / (parent) moves you into the parent directory of the current subdirectory. If you click a Volume name, the contents of that volume are displayed. Also, if you place a different disk in a drive while the Load File requester is displayed, the Volume list is updated to show the new disk. If that drive was the current drive, the window displays the files in the new disk.

SHORTCUTS

Several shortcuts are available in the Load File Requester.

Double clicking on a file name is the same as clicking the file name and clicking Load.

Clicking on a section title in the display window such as "—Files—" will skip the window display down to the next section.

Keyboard shortcuts:

Key	Function
ESC	Cancel
Up Arrow	Move display up one line
Down Arrow	Move display down one line
Shift-Up Arrow	Move display up one section
Shift-Down Arrow	Move display down one section
Return	Same as clicking on Load
D	Shows the directories
F	Shows the files
V	Shows the volumes

SAVE

This option presents a submenu for selecting the type of save you want to perform. The two save options are:

NORMALLY: Brings up a requester for you to save a picture to disk. This requester functions the same as the Load File Requester described under Load in the Picture menu, except that clicking Save saves the picture to disk.

RESIZED: Brings up a requester for you to resize the picture as it is saved to disk. This requester functions the same as the other save file requesters, except that clicking the Resize button resizes and saves the picture to disk. The dimensions for the resized picture are determined by the width and height number settings beside the Resize gadget on the Command Screen. These gadgets are explained in detail under Resize in the Operations section above.

SAVE FAST (Keyboard Equivalent: **Right Amiga-S**)

Saves your work to disk under the current file name. A requester appears for you to confirm your selection. If you want to save your file, click Okay. If you selected Save Fast by mistake or do not wish to save the current file, click No.

REVERT (Keyboard Equivalent: **Right Amiga-R**)

Reverts to the most recently saved version of the picture currently displayed. A requester appears for you to confirm your selection. If you want to revert, click Okay. If you selected Revert by mistake, click No.

Note: Once you have clicked Okay to confirm the Revert option, you cannot restore the picture you reverted from (the most recently displayed picture).

WORKBENCH (Keyboard Equivalent: **Right Amiga-W**)

Closes the Workbench. This option is useful to free up some extra RAM (chip and fast). If the Workbench is open, a check mark appears beside Workbench, and selecting the option closes the Workbench.

ABOUT

Brings up a requester that gives the name of the program, copyright information, and the developers' names.

QUIT (Keyboard Equivalent: **Right Amiga-Q**)

Exits Colors.

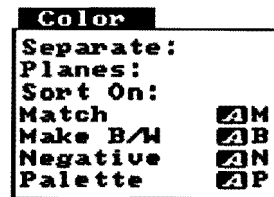
COLOR MENU


Figure 10.4 The Color Menu

SEPARATE:

Presents a submenu of colors. Selecting one of the colors in the submenu performs a color separation on the current picture. For example, selecting Red, produces a red-only separation. The Red, Green, and Blue separations can be used to create transparencies that produce a full-color image when used together. With a single-color printer, and the appropriate color ribbons (yellow, cyan, and magenta), you can create a color printout by printing the Yellow, Cyan, Magenta, and Black separations on top of each other.

The colors in the Separate submenu are:

Color	Keyboard Equivalent
RED	Right Amiga-D
GREEN	Right Amiga-E
BLUE	Right Amiga-U
YELLOW	Right Amiga-Y
CYAN	Right Amiga-C
MAGENTA	Right Amiga-G
BLACK	Right Amiga-K

PLANES:

Sets the number of bit planes used to draw the picture. The number of bit planes determines the maximum number of colors available from the palette. Not all bit plane settings are available in all modes. If a selected plane setting is not available, the option appears in dimmed type, and you are not able to select it. (See Appendix B: Amiga Display Modes for an explanation of how the number of bit planes relates to the number of colors available in a display mode.)

1 PLANE: Sets a single plane image with a maximum of 2 colors.

2 PLANES: Sets a 2 plane image with a maximum of 4 colors.

3 PLANES: Sets a 3 plane image with a maximum of 8 colors.

4 PLANES: Sets a 4 plane image with a maximum of 16 colors.

5 PLANES: Sets a 5 plane image with a maximum of 32 colors, or HAM mode.

6 PLANES: Used to change from 5 to 6 bit HAM mode.

SORT ON:

Presents a submenu of color register attributes. Selecting one of the options in the submenu performs a sort of the color registers (in the Palette and the Register Graph) based on the attribute you selected. The color registers are sorted according to the value of the attribute. The direction of the sort depends on the setting of the Srt HiLo / Srt LoHi flag. The options in the submenu are:

Color	Keyboard Equivalent
RED	Right Amiga-1
GREEN	Right Amiga-2
BLUE	Right Amiga-3
HUE	Right Amiga-4
SATURATION	Right Amiga-5
VALUE	Right Amiga-6
POPULATION	Right Amiga-7
LOCKS	Right Amiga-8

The Locks option is a special case. It allows you to sort all of the locked registers to one end of the graph. It does not rearrange the locked registers according to any other attribute.

MATCH (Keyboard Equivalent: Right Amiga-M)

Remaps the colors of the current picture to use the palette of a second picture (called the match picture) chosen in the file requester.

Select Match from the Color menu. A file requester appears for you to select the picture you wish to match to. This requester functions the same as the Load Picture requester explained above. When the Match button in the requester is clicked, the current picture is remapped.

When a picture is remapped, the colors of the current picture are re-arranged to maintain its original appearance as closely as possible using the match pictures palette.

If the palette of the match picture is larger than the current picture, you are asked if you want to use the partial palette. If you click Okay in the requester, the match is performed using as much of the match picture's palette as the current picture can accommodate. If you select No, the match operation is not performed and you are returned to the Command Screen, where you can add bit planes before trying the Match operation again. Note that any color registers that are locked in the current picture will be maintained and the remaining registers will use colors from the match picture.

MAKE B/W (Keyboard Equivalent: Right Amiga-B)

Converts the current picture to gray scale values. This feature is especially useful if you want to see how the picture will appear when printed in gray scale mode.

NEGATIVE (Keyboard Equivalent: Right Amiga-N)

Converts the current picture to a negative image.

PALETTE (Keyboard Equivalent: Right Amiga-P)

Brings up the Palette window where you see a graph of the color registers with each bar drawn in the color that register contains. Color registers that have a zero population may be rendered in a hashed pattern. This only happens if the population has been determined for the first time after a remapping or size change function. Otherwise all color registers are rendered in solid shades. A rectangular marker in the bottom of a palette register indicates that the register is currently selected.



Figure 10.5 The Palette Window

The lower area of the window lists the commands for manipulating palette colors and registers. To use any of the palette commands, click a register with the left mouse button to make it the current register, click the command you want (the cursor changes to an arrow with "To" under it), then click a second register. To cancel an operation when the "To" cursor is displayed, click the current register again.

SWAP COLORS: Swaps the contents of two color registers.

SWAP REGS: Swaps the registers currently used by two colors.

MELD BY AVERAGE: Changes the color of two registers to the color that is the average of the two original colors. For example, if Color 1 has the values R: 3, G: 6, B: 7 and Color 2 has the values R: 10, G: 8, B: 6, a Meld By Average operation changes both registers to the color with values R: 6, G: 7, B: 6. Note that in this operation, if the average falls between two numbers, the lower number is used. In our example the average of 3 and 10 would be 6.5, so 6 was used for the red value.

MELD BY WEIGHT: Changes the color of two registers to the color that is the weighted average of the two original colors. The operation uses the population count of the two registers to determine the weight each should receive in creating the new color. If register A contains 75% more pixels than Register B, and you are melding by weight, the resulting color will have 75% more of color A than of color B. Note that this option is not available if you have not performed a population count.

MELD REGISTERS: Remaps all pixels that point to the first register you select so that they point to the second register. After this function, the first register will be drawn with hash marks to show the register has a population of zero (no pixels are using it).

Note that this option is not available until you click the P button or select Sort On: Population to perform a population count.

COPY COLOR: Copies the color of the current register to the register you select.

VIEW MODES MENU

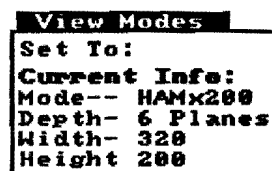


Figure 10.6 The View Modes Menu

SET TO:

This option presents a submenu of display modes that you can select to change the display mode used by the current picture. The modes available in the submenu are:

320 x 200	Low resolution
320 x 400	Low resolution with interlace
640 x 200	High resolution
640 x 400	High resolution with interlace
HAM x 200	Hold and Modify
HAM x 400	Hold and Modify with interlace
EHB x 200	Extra-HalfBrite
EHB x 400	Extra-HalfBrite with interlace

Three of the flags in the **Colors** Command Screen (Best Fit, Resize, and Smooth) affect how **Colors** changes the display mode:

If the Best Fit flag is set, any reduction in the number of colors will cause a restructuring of the original. This is done in an effort to preserve as much of its appearance as possible. Note: ham pictures that have many colors (2000 or more) can take as long as 24 minutes to convert with Best Fit set.

If the Resize flag is set, the picture will be expanded or shrunk (with or without smoothing, depending on whether the Smoothing flag is set) to fit the new mode.

CURRENT INFO:

Displays information about your current picture.

MODE displays the mode your current picture is in. For example, HAM x 400.

DEPTH displays the number of bit planes your current picture is using.

WIDTH displays the width of the picture in pixels.

HEIGHT displays the height of the picture in pixels.

NOTES

NOTES

In DeluxePhotoLab, there are two ways to describe, and mix, colors. One method describes colors as a combination of three primary colors: Red, Green, and Blue. We refer to this as RGB color mixing. The other method describes colors as made up of the three properties of Hue, Saturation, and Value. We refer to this as HSV color mixing. It is most important that you understand RGB color mixing, since this is the method DeluxePhotoLab uses when it calculates color values, but HSV color mixing has some advantages of its own, and an understanding of its relationship to RGB is useful.

RGB COLOR MIXING

The Amiga computer uses RGB color mixing based on sixteen levels of each of the color components from 0 to 15. This yields a universe of 4,096 colors ($16 \times 16 \times 16 = 4,096$). The universe of possible colors is best imagined as a cube in which each dimension is measured in one of the three primary colors. Figure A.1 shows a sketch of the RGB color cube.

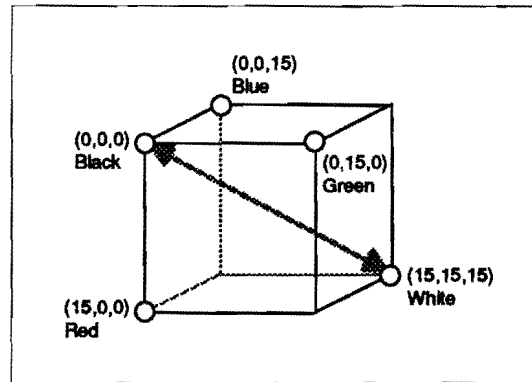


Figure A.1 The RGB Color Cube

Notice that black is the absence of color (R_0, G_0, B_0) and white is the maximum level of the three colors (R_{15}, G_{15}, B_{15}). The line running diagonally through the center of the cube from black to white shows the positions of the grays, which are formed by combining equal amounts of red, green, and blue. Thus R_7, G_7, B_7 would yield a medium gray.

The corners of the cube that are not labeled are the three secondary colors: cyan, yellow, and magenta. If you move backwards along the edge of the cube to add Blue to Green, you would eventually reach cyan (R0, G15, B15). Likewise, moving down from Green to add Red produces yellow (R15, G15, B0), and moving backwards from Red to add Blue produces magenta (R15, G0, B15).

Each secondary color is also the complement of the primary color not contained in it. So cyan (R0, G15, B15) is the complement of Red. Notice that in the color cube, cyan and Red are at opposite corners. In a moment, you'll see that this arrangement parallels the position of colors on the color wheel in HSV color mixing. Also notice that if you add a primary color and its complement, the result is always white: 15, 0, 0 added to 0, 15, 15 yields 15, 15, 15. In fact, adding any two colors always moves the result closer to white.

HSV COLOR MIXING

The HSV method of color mixing breaks each color down into its Hue, Saturation, and Value.

Hue simply refers to the color's position on the color spectrum or rainbow — Red, Yellow, Green, Cyan, Blue, or Magenta, and the various shades in between. (Note that this spectrum is based on the mixing of colored light and not on that of reflected light or pigment. The spectrum based on the mixing of pigment is based on the primary colors of Red, Yellow, and Blue and its order is Red, Orange, Yellow, Green, Blue, Violet.)

The spectrum of hues is normally arranged as a circle or "color wheel" as shown in Figure A. Thus, Hue is measured in degrees. Red is at the top of the circle by convention. If you are trying to select a color using HSV, it helps a great deal to be familiar with the color's position on the color wheel. Notice that, as we mentioned in the discussion of RGB, each color's complement is located at the opposite end of the circle.

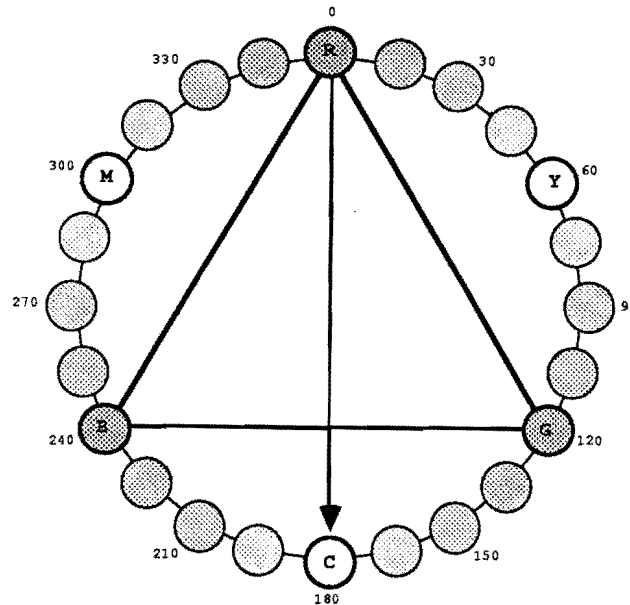


Figure A.2 Additive Color Wheel

Saturation refers to the strength of a particular hue — whether it is relatively pure (and hence highly saturated), or whether it contains some proportion of white. Thus, the more white, the less saturated.

Value refers to a color's relative lightness or darkness (sometimes referred to as Luminosity). A color with a high value would have little or no black, whereas colors with low value would contain more black. Irrespective of Hue and Saturation, a Value of zero produces a pure black.

Even at their highest saturation, hues are not all of the same value. For example, fully saturated green has a higher value than fully saturated red. You will notice this difference in value in particular if you use B&W mode in **Paint** to convert a color picture to black and white only.

Another important concept you should remember is that Value cannot change independent of Saturation. As a color moves closer to white or black, its Saturation also changes. On the other hand, Saturation can change without any change to Value; the color simply moves toward its level of gray.

COMPARING RGB AND HSV

When you work with DeluxePhotoLab, you will usually want to work in RGB, particularly since the RGB color values are used to calculate changes in color. However, sometimes it is easier to find the color you want to paint with by locating its Hue and then adjusting the Saturation and Value. Producing grays is one instance where it is easier to mix the color in HSV. Since a hue with no saturation is a gray level by definition, to produce any gray, move the Saturation slider to 0 and adjust the Value slider until you have the gray level you want. This is much easier than setting each of the R, G, and B sliders to the same value, and then adjusting all three of them until you find the right gray level.

To give you a point of reference, the table below shows the name of a color and its respective RGB and HSV values.

Color	RGB			HSV		
Black	0	0	0	any	any	0
Medium Gray	7	7	7	any	0	7
White	15	15	15	any	0	15
Red	15	0	0	0	15	15
Yellow	15	15	0	60	15	15
Green	0	15	0	120	15	15
Cyan	0	15	15	180	15	15
Blue	0	0	15	240	15	15
Magenta	15	0	15	300	15	15

Notice that when you work in HSV, all pure colors have Saturation and Value of 15. This makes it much easier to find a basic color if you are not familiar with how Red, Green, and Blue mix to form it.

DeluxePhotoLab supports all of the Amiga graphic display modes—low resolution, high resolution, extra-halfbrite, and hold and modify. (Dual playfield mode is not directly supported, since it is really a variation of the low and high resolution modes.) You don't need to know much about the different display modes to create great art with DeluxePhotoLab. But some understanding of how the display modes work, and in particular, how they affect the number of colors available in the palette, can help you work more effectively.

This Appendix explains how a pixel derives its color, and how the display mode and the number of bit planes determines the number of colors available in the palette. We've tried to avoid overly-technical explanations, but the material is still very technical. If you don't understand everything you read here, don't be discouraged, just remember that you don't really need to know this.

WHAT IS A BIT PLANE?

A bit plane can be thought of as a flat grid of dots—a plane of dots, where each dot represents a bit. So when we say “bit”, think dot.

If you look ahead to Figure B.1, you'll see that we draw the bit planes as flat surfaces. The best way to think of this surface is as a flat grid behind your computer screen. (This isn't actually how it works, but it may help you visualize how the colors are assigned to pixels.) The grid is the same dimensions as your screen resolution. For example, if your screen is 320 pixels wide and 200 pixels high, each bit plane is also 320 x 200 bits.

BIT PLANES AND AVAILABLE COLORS

Now imagine that each dot is either filled in or it's not. If the dot is filled in, it has a value of 1 and is said to be “on”. If it is not filled in, the dot has a value of 0 and is said to be “off”. In the simplest case of a display mode with only one bit plane, the picture can have only two colors. A pixel is one color if its corresponding bit is on or a different color if the bit is off.

The bit planes themselves don't determine the color of the pixel, they simply determine which color register the pixel looks to for its color. With a single bit plane, the pixel points to either Color 0 or Color 1. If you add another bit plane behind the first, the number of possible color registers doubles to four. Each additional bit plane doubles the number of colors again. The color register contains the numbers for the amount of red, green, and blue in the color.

LOW RESOLUTION AND HIGH RESOLUTION DISPLAY MODES

Figure B.1 illustrates how the bit planes determine which color register a pixel points to in Low Resolution display with five bit planes. Take a look at this figure for a moment. Notice that we've numbered the bit planes 0 through 4. Notice also that the number of each bit plane corresponds to the power of two by which each bit plane value is multiplied. For example, the dot in bit plane 3 has a value of 1, and because it is in bit plane 3, the 1 is multiplied by 2^3 , which equals 8 ($2 \times 2 \times 2$). The numbers from the five bits are then added together to obtain the number of the color register the pixel points to.

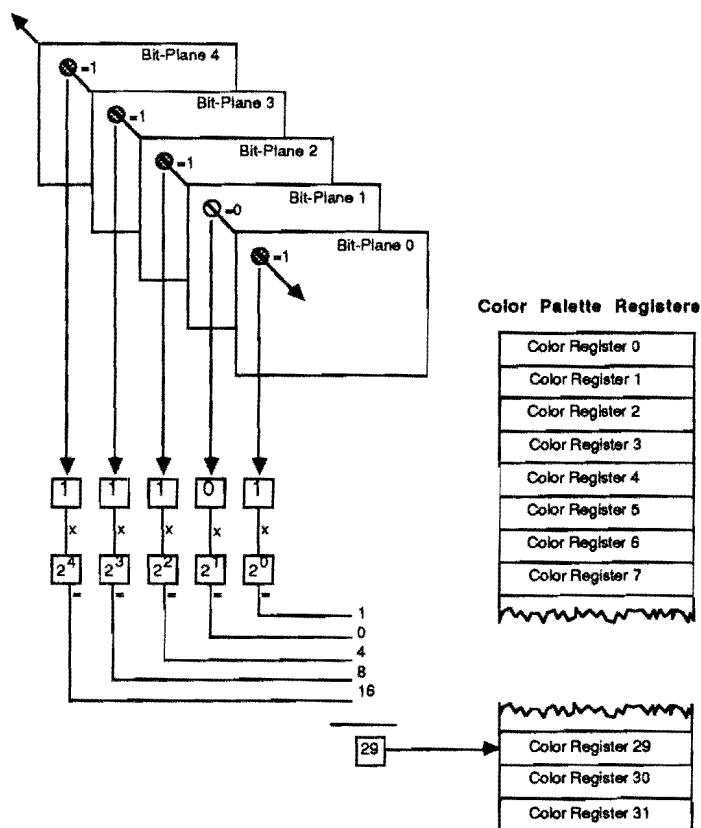


Figure B.1 Low Resolution Pixel Color Selection

Low and High Resolutions work exactly alike, except that High resolution does not support as many bit planes, and therefore provides fewer colors. Figure B.2 lists the graphics modes and the number of bit planes and colors each supports. Notice that Hold And Modify mode is a departure from the notion that each additional bit plane doubles the number of colors available. Hold and Modify is a special case that we'll explain in a moment.

		Graphics Mode							
Number of Bit-Planes		320x200	320x400	640x200	640x400	EHBx200	EHBx400	HAMx200	HAMx400
	1	2	2	2	2	n/a	n/a	n/a	n/a
	2	4	4	4	4	n/a	n/a	n/a	n/a
	3	8	8	8	8	n/a	n/a	n/a	n/a
	4	16	16	16	16	n/a	n/a	n/a	n/a
	5	32	32	n/a	n/a	n/a	n/a	240	240
	6	n/a	n/a	n/a	n/a	64	64	4096	4096

Figure B.2 Number of Colors in Each Display Mode

EXTRA-HALFBRITE DISPLAY MODE

Extra-Halfbrite uses a trick to increase the number of colors available on the screen. The Amiga supports only 32 color registers directly, but Extra-Halfbrite uses a sixth bit plane to indicate an additional 32 registers that don't really exist. The first 32 registers are standard color registers; the second 32 are halfbrite equivalents. Pixels that use halfbrite colors point to one of the standard color registers and indicate that the color should be displayed at half its normal intensity. This means that the second 32 pixels are not independent of the first 32; you can change the color values only in the first 32 registers, and the change is automatically reflected in the halfbrite equivalent. Figure B.3 shows how Extra-Halfbrite uses the bit planes and color registers.

Note: Not all Amiga 1000 computers support Extra-Halfbrite. The easiest way to find out whether or not your computer supports this display mode is to try it. Open an Extra-Halfbrite screen and look at the Palette (make sure the pointer is not in the Menu Bar or Toolbox). If the last 32 colors are the same as the first 32, your computer doesn't support Extra-Halfbrite.

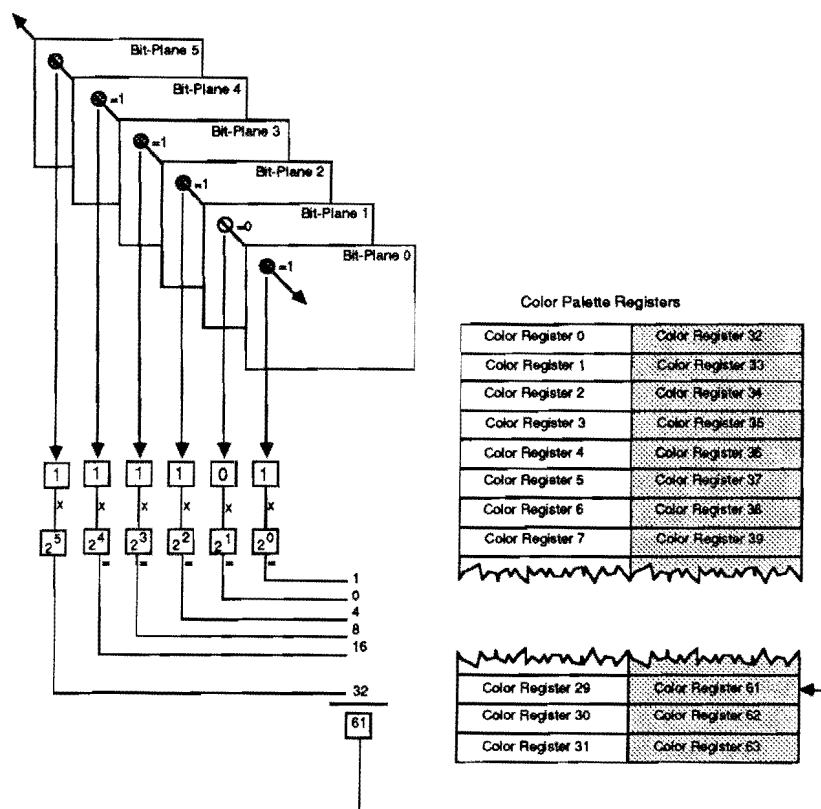


Figure B.3 Amiga Extra-Halfbrite Pixel Color Selection

HOLD AND MODIFY DISPLAY MODE

Hold and Modify display mode uses only 16 color registers, but manages to display all 4,096 colors on the screen at the same time. To accomplish this, HAM display mode uses the first four bit planes to address the 16 color registers, and uses the fifth and sixth bit plane to determine whether the register color or a HAM color should be used.

A HAM color is formed by taking the RGB value of the preceding pixel on the screen, and substituting a new value for one of the RGB components. The new value is the number derived from the first four bit planes. Here's a quick example:

Assume the color values of one pixel (a register color) are R3, G15, B11. The following pixel (a HAM color) would have the color values R13, G15, B11, if bit planes 0 through 3 pointed to register 13 and bit planes 4 and 5 indicated that the register value should be used to modify the red component of the preceding color. (Figure B.4 shows how the six bit planes are used to select a color in Hold and Modify mode.)

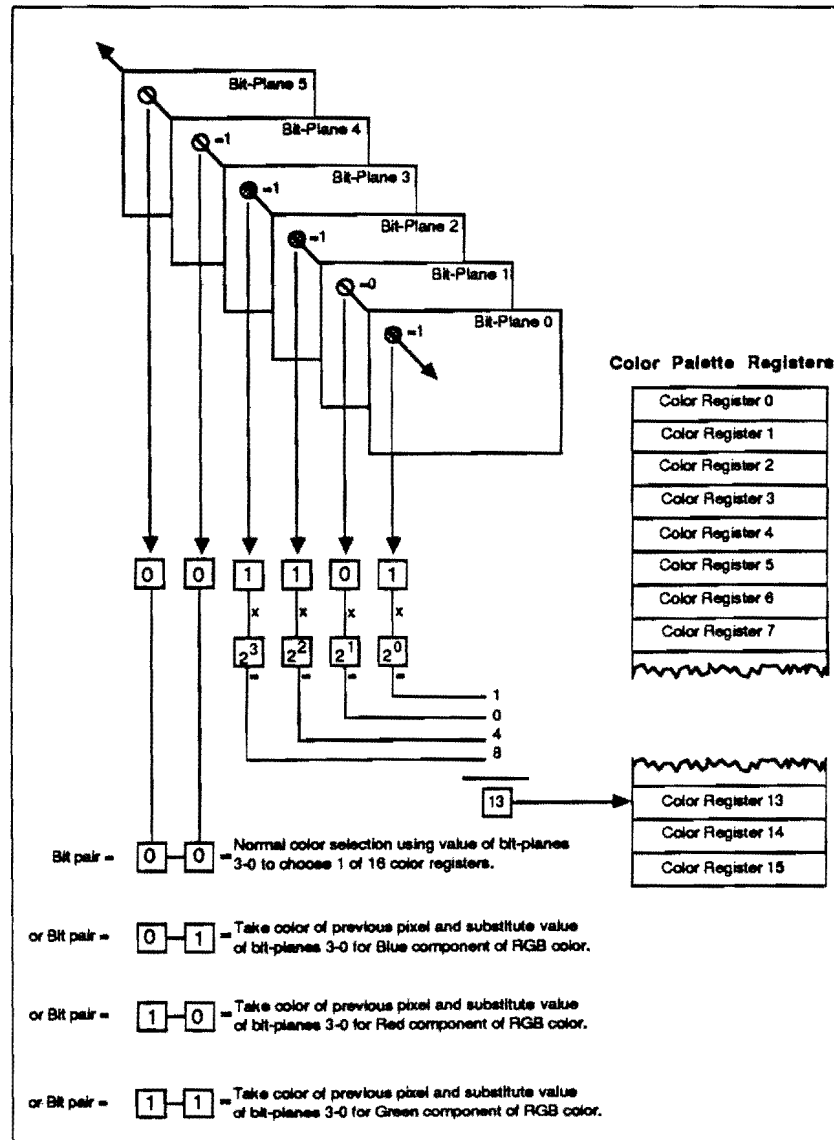


Figure B.4 Hold and Modify Pixel Color Selection

Because HAM colors are based on color values of the preceding pixel, and only one color value can be changed at one time, it may take three pixels to reach the color you really wanted. In Figure B.5 it takes three pixels to change black (R0, G0, B0) to white (R15, G15, B15). Note that this example assumes there are no intermediate colors in the normal color registers. This gradual change from one color to the next is sometimes referred to as "ramping" the color, and appears on the screen to the left of HAM pixels. If you need fine details into your picture, you will want to use a color from the color registers, because those colors do not require ramping.

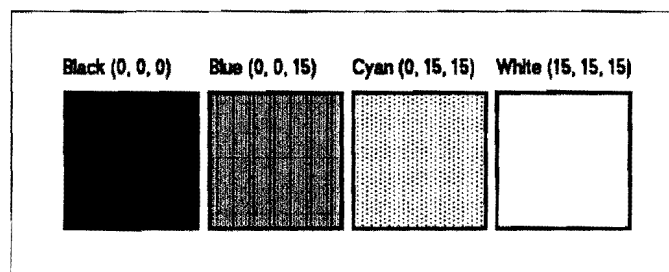


Figure B.5 HAM Color Ramping

In *Paint*, if you hold a brush over an area made up of HAM pixels, you may see an effect called "fringing." The fringing appears as streaks running to the right from the edge of the brush. This effect is only temporary. When you paint the brush onto the picture, *Paint* corrects the fringing, but you may see the "ramping" effect where *Paint* recreates the HAM color to the right of your brush.

This appendix briefly describes some of the techniques and processes involved in creating a few of the pictures on your DeluxePhotoLab art disk. This appendix is included so that you can match the effect you see on the screen with the techniques used to create the effect.

EVOLUTION OF THE PACKAGE COVER

Larry Keenan based the cover photo for DeluxePhotoLab on a photograph from his stock photo file. The original photograph was a 16" x 20" photo/collage of the room with the world and the hourglass. Larry re-photographed the collage as a transparency and then digitized the transparency on the Amiga. Digitizing from a transparency is a great way to get sufficient lighting in the digitized image.

Next, Larry set-up the camera lens (with the room/world reflecting in the lens) and the cable release in the studio and shot them in 35mm. Lighting was very important to maintain continuity in the assembled photograph. He lit both items in warm tones to give the feeling of being in the room. Larry then digitized the two best shots.

At this point, Larry had three digitized images in HAM Interlace: the room, the lens with the Globe reflected, and the cable release. These three elements were combined with DeluxePhotoLab to create the package cover photograph.

To start, Larry had to enlarge the room to fit the width of the layout for the software package cover. He made sections of the right and left walls into brushes and used the brushes to extend the walls outward for more width.

Next he cut out the lens as a brush and dropped it into the room. Once the lens was properly placed, Larry touched up (softened and blended) the edges. He then proceeded to refine the rest of the picture, particularly the clouds, skylight, window edges and the tones in the walls.

Larry selected the cable release brush in four sections and placed it in the room. Notice how the cable release arches back to the floating globe and flows smoothly forward to give a dramatic perspective. This 3-D perspective creates a sense of reality in the picture. Larry also carefully added color to the edges of the cable release to give the feeling of light coming in through the window.

Larry also sharpened the sand in the hourglass at the top to make a stronger pyramid to symbolize part of the Electronic Arts logo. (You'll find some form of each of the three shapes in the picture).

When Larry submitted his first version of the cover to Electronic Arts, we requested that he reduce the size of the world floating in the room to make the lens seem larger and thus increase the 3-D quality of the picture. We also suggested a change to the angle and flow of the cable release. To accomplish these changes, Larry went back to an earlier version of the picture before the cable release was added. He then created brushes from the wall and carefully painted out the globe, which he digitized again about 25% smaller and dropped back into the picture. He set up the cable release and re-photographed it. To help find the right size and position for the new cable release, Larry drew the changes on the monitor screen in felt tip pen, and then arranged the cable release to match the drawing as he shot it with the digitizing camera. This is a great way to position element and minimize guess-work.

Once again, Larry added the cable release to the pictures as several smaller brushes. Because of the size of the cable release, Larry had to cut the release into four sections as brushes. He then "beefed-up" the cable release to give it more dimension using the Paint Modes, such as blend, average, and mix. He then touched up the cable release and globe on all sides.

When this version of the cover was finished, another color stat was made and presented to Electronic Arts showing full mock-up with type. Only minor refinements were suggested, one of which was to smooth out the bend in the cable release. When looking at the computer screen, the eye could detect no need for correction, but the camera and film see the digitized image differently. On film, the image tends to show greater contrast and some areas tend to block-up. So Larry had to over-do or over-enhance some textures and tones especially for the camera.

Larry finds it is very important to view the work with a clear vision. To do this, he uses the Pola Palette from Liquid Light to make test prints of his progress. He finds these test polaroids are helpful in checking his progress and telling him the "real" from the surreal. This was especially important in this project, since he had to keep in mind how the image would print as a package cover. We think he did a great job.

PICTURES BY GENE BRAWN

In addition to spending countless hours testing DeluxePhotoLab and assisting with the design of tutorials, Gene Brawn put the program through its paces by building pictures. In the process, Gene created three excellent pictures which found their way onto the art disk.

THE HUNTERS

The Hunters is by far the most complex image he created for DeluxePhotoLab. The hunter, his face, the small lizard, the Godzilla, and the Easter Island background are all separate HAM Interlace images. The images were created at different times with different palettes and had to be matched and modified to combine them into a single picture.

The hunter was originally created as a black and white image and then colorized with a combination of the Add, And, Low Mix, and Mix Paint Modes. The head was a digitized image of Gene's own head, which he smoothed and reduced to fit the body.

The lizard, which Gene calls a Mylarasaurus because of the mylar effect he created on it, began life as a digitized image of a toy dinosaur. Gene cut this into its major pieces (head, torso, and legs) and made solid color mattes from them. He then created a one pixel wide brush of the grays ranging from dark to light and back to dark. Using the Brush Warp setting of the Fill Control, he filled each piece of the lizard to give it a mylar look. He then reassembled the pieces and saved it as a brush.

Godzilla was also a digitized toy model. The image was cut out, touched-up, smoothed and then used at its full size.

Gene's most important task in assembling the final picture was to set the palette correctly. He began by reducing the number of colors in the Easter Island background picture as far as possible. He used Colors to reduced the number of colors in small steps until he was satisfied with the result. Then he removed all of the blues and added a basic range of greys for the hunter and mylarasaurus because it is usually faster to create a HAM color from a gray scale color and the grays don't change the look of the colors beside them. The original background picture (before color reduction and palette changes) was then remapped to the new palette using the Match option in Colors.

Gene loaded his new background picture in **Paint**, and cut the statue out as a brush to move it to the right. He used pieces of the surrounding grass and sky to rebuild the space vacated by the head.

To make Godzilla seem larger, Gene placed the image behind the hill so that its legs and feet would be hidden. To make Godzilla seem farther away, and thus even larger, he made it look as though its head was in the clouds. Gene accomplished both of these effects in a few easy steps. First he cut out the sky and surrounding areas (leaving a black hole) and saved the screen without sky. He cleared the page and stamped down the sky and surrounding area. Then he loaded Godzilla as a brush. Using the **Shade Control**, Gene set the **Highlight** with the horizontal bar at the top of the region so that the image would be most solid above the clouds. He then stamped Godzilla into position, and erased every part of the image that was outside of the cutout area (the lower legs and feet). Finally, he picked up his new sky with Godzilla, reloaded the background picture without sky, and stamped the sky and Godzilla back into position.

To finish it all off, Gene loaded the hunter and the mylarasaurus brushes, stamped them in their final positions, and touched them up around the edges.

PHOTOGIRL

The original image of the girl in this picture was digitized in **Black and White** from an old magazine ad. In **DeluxePhotoLab**, the girl was cut out from the background and the edges were smoothed by hand. The face and dress were redrawn to be smoother and flatter. Using the **Paint Modes**, Gene added color to the hair in **Low Mix**, added color to the sash and collar in **And**, and to the face and hands in **Add**. Gene then saved the girl as a brush.

Next Gene cleared the screen and created a 4 x 4 pixel brush consisting of the main colors from the palette randomly arranged. With **Brush Pattern** set in the **Fill Control**, Gene filled the empty screen with this pattern to create a new background. Then he loaded the girl brush and placed her on the left side of the screen.

Since he planned to place the title over the lower part of the girl's striped dress, Gene faded the dress into the background so that the vertical stripes wouldn't make the horizontal title difficult to read. Here are the steps Gene followed:

- Select the lower part of the dress as a brush
- Bring up the Shade Control
- Set the Dither and High sliders to the maximum settings and set the highlight low in the box.
- Select Color from the Brush Mode menu
- Select the dominant color from the background as the brush color and stamp the brush over the dress in the original position.

The typeface Gene wanted to use for the slogan and title was a custom font that he didn't have in his system fonts directory. So, to make the font useable from Paint, Gene returned briefly to the Workbench screen, opened a new CLI window, and assigned fonts: to a font directory on his second drive. (The command to assign fonts in this case was:

```
assign fonts: df1:fonts
```

We thought this was a neat tip you might want to remember.

When he returned to Paint, Gene loaded the font directory from the Font menu and typed his slogan on a clear screen. He saved each block of text as a brush. Typing text on a clear screen and using the text as a brush is the best way to use text in HAM.

Gene created the drop-shadow effect for the text by using a gray with a Value of 1 (RGB values are 1,1,1) with Color Brush Mode and Sub Paint Mode.

Finally, on a different screen, Gene made the main title including the drop shadow. Then he loaded it into the main screen as a brush and used Resize Draw from the Brushes menu to place the text and make it slightly smaller and smoother all in a single operation.

COMICPOSTER

Like The Hunters, this picture was composed from separate digitized images: the red figure below the earth, the figures on the left, and the earth.

Before combining the images, each was matched to the palette of the figures on the left using the Match option in **Colors**. Then, each of the characters was cut out and saved as a separate brush. Gene drew over them to remove the textures produced in the digitizing process so that the overall "look" would be flatter and more like a comic.

Gene then created the diagonal background area on a new screen using the same technique described for PhotoGirl. The title was also added using a method similar to adding the slogan in PhotoGirl. Finally, the figure brushes were loaded in order from back to front (earth, figures on the left, and red figure) so that they could be easily stamped. Notice that Gene added a shadow below the arm of the red figure to give dimension to the picture.

PROJECT MENU

Right Amiga-N	New
Right Amiga-C	Close
Right Amiga-L	Load
Right Amiga-A	Load At
Right Amiga-S	Save
Right Amiga-Z	Page Size
P	Palette Screen
D	Showpage overscan
S	Show page fast
Shift-S	Show page smooth

BRUSHES MENU

Right Amiga-G	Load brush
Right Amiga-P	Save brush
X	Horizontal Flip
Y	Vertical Flip
Z	Rotate 90 degrees clockwise
Shift-Z	Rotate 90 degrees counter-clockwise
W	Rotate Free
G	Grab last drawn
Shift-G	Grab underneath last drawn
Right Amiga-D	Resize Draw
Right Amiga-H	Handle
Right Amiga-R	Remap

OPTIONS MENU

Q	Transparency on
Shift-Q	Transparency off
C	Corner to corner ovals
Shift-C	Center ovals
V	Shade requester
R	Repeat last draw operation
\	Smooth

 FONTS MENU

Right Amiga-F	Load new font
Right Amiga-1 thru 6	Activate font
Ctrl-P	Plain
Ctrl-U	Underline
Ctrl-I	Italic
Ctrl-B	Bold

MODES MENU**BRUSH MODES**

F1	Matte mode
F2	Color mode
F3	Pattern mode
F4	Store mode

PAINT MODES

Left Alt-F1	Solid
Left Alt-F2	Low Mix
Left Alt-F3	Mix
Left Alt-F4	Average
Left Alt-F5	Blend
Left Alt-F6	Shade
Left Alt-F7	SubPict
Left Alt-F8	Scale
Left Alt-F9	Scale2

Right Alt-F1	Add
Right Alt-F2	Sub
Right Alt-F3	Max
Right Alt-F4	Min
Right Alt-F5	XOR
Right Alt-F6	OR
Right Alt-F7	AND
Right Alt-F8	Hlf
Right Alt-F9	B&W

Left or Right Alt-F10	Solid
-----------------------	-------

AFFECT

All	F5
Foreground	F6
Background	F7

TOOLBOX/PAINT SET COMMANDS

;	Dotted Freehand
'	Continuous Freehand
/	Straight Line
J	Curve tool
'	Airbrush
T	Text tool
L	Fill tool
[	Unfilled Rectangle
Shift-[	Filled Rectangle
E	Unfilled Oval
Shift-E	Filled Oval
F	Freeform fill tool
Shift-F	Polygon fill tool
B	Brush Selector
Shift-B	Freeform Brush Selector
M	Magnify tool
I	Zoom in
O	Zoom out
K	Clear screen
U	Undo tool

SPECIAL KEYS

.	Get Last Built-in Brush
,	Pick Cursor
A	Again (repeat last menu)
Help	Rotates through HAM color combinations
F8	Toggle cursor
F9	Toggle menu bar
F10	Toggle toolbox
Spacebar	Abort
ESC	Abort Text mode
N	New position in magnify
↑↓←→	Scroll the picture
Shift-↑↓←→	Scroll the picture in larger jumps
Tab	Cycle through the picture screens

FILE REQUESTERS

ESC	Same as clicking Cancel
Up Arrow	Move display up one line
Down Arrow	Move display down one line
Shift-Up Arrow	Move display up one section
Shift-Down Arrow	Move display down one section
Return	Same as clicking Load
D	Shows the directories
F	Shows the files
V	Shows the volumes

POSTERS

Right Amiga-L	Load
Right Amiga-P	Print
Right Amiga-Q	Quit
Right Amiga-V	Preview
Right Amiga-A	Aspect Ratio
Right Amiga-H	Horizontal Printing

COLORS
COMMAND SCREEN

R, G, B, H, S, V, P	RGVHSVP Buttons
L	Lock all registers
N	Clear all locks
M	Mosaic
Z	Resize
C	Reduce
U	Undo
F	BSTFIT / TRUNCT
O	SAMPLE / SMOOTH
K	RESIZE / SIZE OK
I	SRT HiLo / SORT LoHi
T	REAL / TEST

MENU OPTIONS

Right Amiga-S	Save Fast
Right Amiga-R	Revert
Right Amiga-W	Workbench
Right Amiga-Q	Quit
Right Amiga-M	Match
Right Amiga-B	Make B/W
Right Amiga-N	Negative
Right Amiga-P	Palette

SEPARATIONS

Right Amiga-D	Red
Right Amiga-E	Green
Right Amiga-U	Blue
Right Amiga-Y	Yellow
Right Amiga-C	Cyan
Right Amiga-G	Magenta
Right Amiga-K	Black

SORTS

Right Amiga-1	Red
Right Amiga-2	Green
Right Amiga-3	Blue
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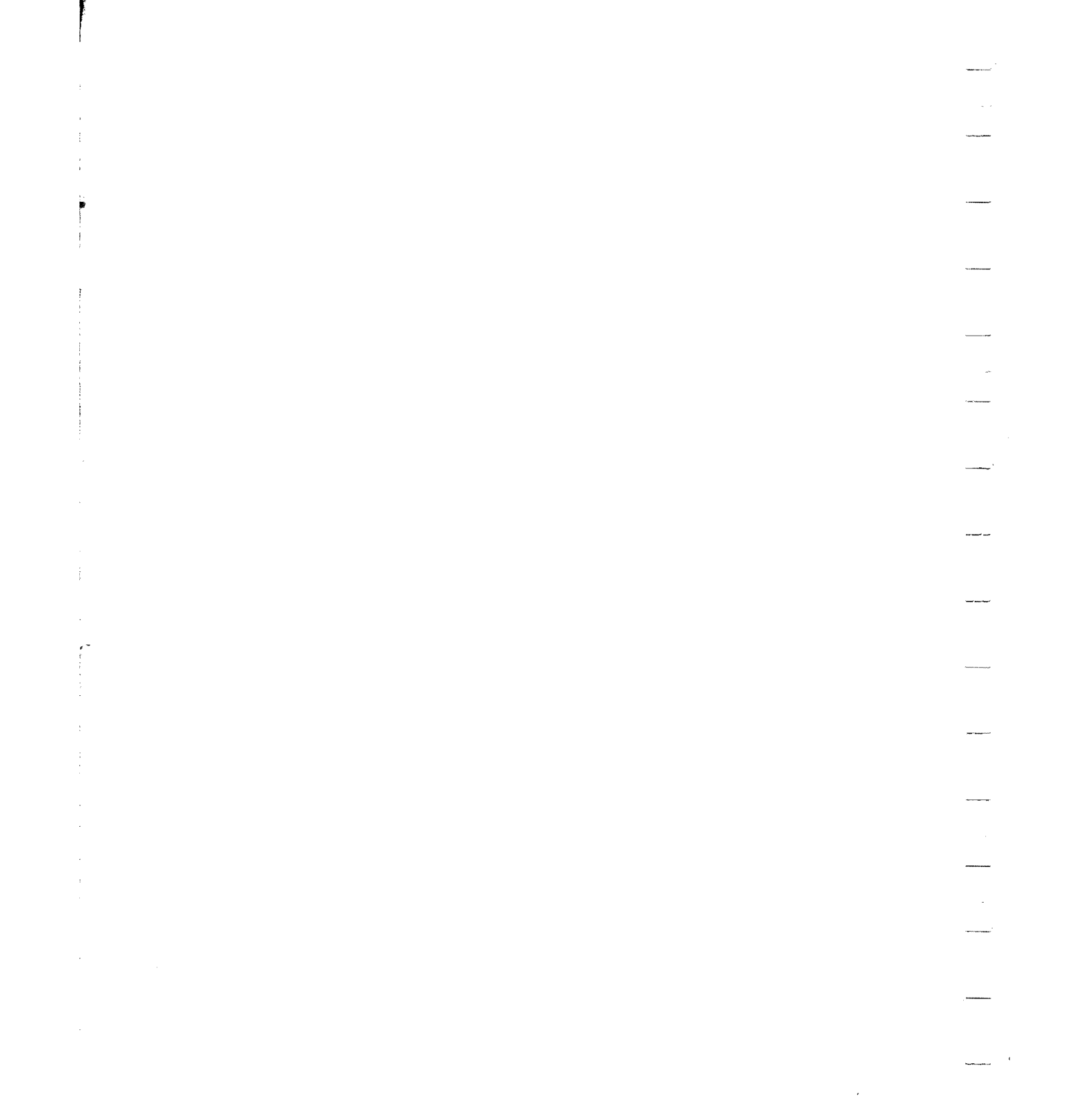
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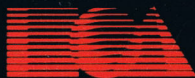
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